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THE USE OF RECORD FORMS AND MECHANICAL METHODS OF ANALYSIS IN THE STUDY OF CLINICAL DATA*

BY J. LERMAN, M.D.,‡ AND J. H. MEANS, M.D.‡

THE value of hospital records from the point of view of clinical research is dependent upon three factors: 1. The state of our knowledge. 2. The accuracy and care with which the information is gathered and recorded. 3. The availability of this information for purposes of study. The methods for improving the state of our knowledge are numerous and do not concern us here. Methods that will improve 2 and 3 are becoming available. One must try and study them with care in order to determine how much they will facilitate clinical research and increase our knowledge of disease. A record form for recording data and a punch card system for mechanical handling of the data are some of such methods. Believing that they may be highly valuable for hospital records as a whole, we have sought for demonstration purposes to prove their usefulness in the analysis of data of a special clinic, namely our Thyroid Clinic, which handles a relatively homogeneous group of cases.†

METHOD

The history and physical examination of every new patient coming to the clinic are recorded on a special form, consisting of a double sheet of printed questions (figures 1 to 4). The examiner merely has to check the findings as positive, negative, or doubtful, as the case may be, using the method of checking indicated at the top of page 1 (figure 1). When an item of information permits of these three interpretations then it is printed as a single statement to be checked on the preceding dotted line by one of three notations. For example, the symptom "palpitation" is checked by "√", "o", or "?", to be interpreted as "present", "absent" or "doubtful", respectively. On the other hand, where there are more than three possibilities to an item of information, each possibility, except the doubtful one, is printed in a group. The proper item is then checked by the mark "√". When the information in this case is doubtful, a question mark is placed before the whole group. For example, the item "appetite" is found on page 1 as follows:

.....Increased appetite
.....Decreased appetite
.....Normal appetite

Since these statements are mutually exclusive only one is checked; or if the information is doubtful, a question mark is placed before the whole group. The heavy black line separates one group from another.

In addition, the severity and duration of many of the symptoms or group of symptoms are recorded. "Severity" has been divided arbitrarily into three grades, and checked as 1, 2, or 3. "Duration" is recorded in days, months, or years, in the space provided. The symptoms and physical findings are arranged in groups and each main group has a proper heading. The number of items recorded on the form is arbitrary and is limited by various factors, such as the kind of disease to be studied, the number of cases, the time available, and the factors connected with the method of analyzing the data, to be discussed below. However, in any given instance, one may write in facts which are not printed in the form.

In addition to the history and physical examination, laboratory studies are recorded near the bottom of page 4 (figure 4), i.e., basal metabolic rate, pulse rate, blood pressure, roentgen-ray examinations of the chest, blood counts, glucose tolerance and electrocardiogram. The treatment recommended is checked and the diagnosis or impression recorded. Either of these may be done at the time of the first examination or deferred until final disposition of the case. Finally a space is available at the bottom of page 4 for discussion or for noting any unusual features of the case.

The facts printed on the record are so arranged as to permit their transfer to a punch card by code. As shown in figure 5, the punch card is 3¼ by 7 3/8 inches, containing 45 columns of numbers from 0 to 9 each. The columns are numbered at the bottom of the card. At the top of the card there is room for two additional numbers, namely the X or 11 position

*From the Thyroid Clinic and Metabolism Laboratory of the Massachusetts General Hospital, Boston, Massachusetts.

†A preliminary report of this subject has already been published in the Proceedings of the Twenty-Third Annual Meeting American Society for Clinical Investigation, J. Clin. Invest. 10: 675, (Aug.) 1931.

‡Lerman—Research Fellow in Medicine, Massachusetts General Hospital. Means—Jackson Professor of Clinical Medicine, Harvard University Medical School. For records and addresses of authors see "This Week's Issue," page 1171.

MASSACHUSETTS GENERAL HOSPITAL
SPECIAL THYROID SHEET

Hosp. No. .....
O. P. D. No. .....
Med. Lab. No. .....

Name..... Date.....

Check as follows:
√ = Present o = Absent ? = Doubtful x = Unobtained

Sex **Color** **Civil State** **5—Age**.....
4 –.....(1).....Male (3).....White (5).....S
(2).....Female (4).....Colored (6).....M
(7).....W

C. C. .....

6—(1).....Symptoms of Increased Heat Loss { 1 Warmth, 2 Increased Sweating, 3 Flushing } Severity.....Duration.....
(2).....Symptoms of Decreased Heat Loss { 4 Cold, 5 Decreased Sweating }

(3).....Normal Heat Loss

(4).....Loss of Weight / (5).....Gain in Weight } Degree.....Duration.....
(6).....Maintenance of Average Weight

Number of Bowel Movements Daily.....
Consistency.....

(7).....Increased Appetite / (8).....Decreased Appetite } Degree.....Duration.....
(9).....Normal Appetite

(10).....Diarrhea: / (11).....Constipation: } Degree.....Duration.....
(12).....Normal Bowel Action

Cathartics: How often and what kind.....

7—(1, 2, 3).....Average Severity and (4-11).....Duration of Above Symptoms

CARDIAC SYMPTOMS

8—(1, 2).....Palpitation:
(3, 4).....Irregular Heart Action:
(5, 6).....Dyspnea:
(7, 8).....Precordial Pain:

CHARACTER OF CARDIAC SYMPTOMS

(9).....Constant
(10).....Paroxysmal
(11).....Related to Extraneous Factors
(12).....Not Related to Extraneous Factors

9—(1, 2, 3).....Average Severity and (4-11).....Duration of Above Symptoms

PRESSURE SYMPTOMS

10—(1, 2).....Cough: Degree.....Duration.....
(3, 4).....Hoarseness or Aphonia: Degree.....Duration.....
(5, 6).....Choking Sensation: Degree.....Duration.....
(7, 8).....Difficulty in Swallowing: Degree.....Duration.....

11—(1, 2, 3).....Average Severity and (4-11).....Duration of Above Symptoms

12—Goiter: (1, 2, 3).....Size and (4-11).....Duration.....

13—Exophthalmos: (1, 2, 3).....Degree and (4-11).....Duration.....

NEUROLOGICAL SYMPTOMS

14—(1, 2).....Sense of Exhaustion, Weakness or Fatigue: Degree.....Duration.....
(3, 4).....Nervousness, Irritability or Restlessness: Degree.....Duration.....
(5, 6).....Tremor: Degree.....Duration.....
(7, 8).....Loss of Memory: Degree.....Duration.....
(9, 10).....Emotional Instability: Degree.....Duration.....

(1, 2).....Headache .....
(3, 4).....Dizziness .....
(5, 6).....Insomnia .....
(7, 8).....Unsteady Gait.....
(9, 10).....Muscle and Joint Pains.....
(11, 12).....Tingling in Hands and Feet.....

FIGURE 1. Page 1 of the special record of the Thyroid Clinic.

MENSTRUAL HISTORY DURING P. I.

15—(1).....Early Onset of Cta
(2).....Late Onset of Cta
(3).....Normal Onset of Cta
} Age.....

(4).....Irregular: Duration.....
(5).....Regular: Duration.....
(6).....Cyclic Irregularity: Duration of Cycles.....
(7).....Frequent Metrorrhagia
(8).....Infrequent Metrorrhagia

16—(1).....Amenorrhea
(2).....Oligomenorrhea
(3).....Menorrhagia: Degree.....
(4).....Normal Flow

(5, 6).....Dysmenorrhea: Degree.....Duration.....

17—(1, 2, 3).....Average Severity and (4-11).....Duration of Above Symptoms

MENOPAUSE

18—(1).....Artificial
(2).....Natural

(3).....Early Onset
(4).....Late Onset
(5).....Normal Onset
} Age.....

Duration.....
Severity of Menopause Symptoms: (8).....mild, (9).....moderate, (10).....severe.

MARITAL HISTORY

Years of Marriage.....
19—(0-9).....Number of Children.....
20— Number of Years since Last Pregnancy:
(1).....Less than one year
(2).....1-3 years
(3).....3-5 years
(4).....5-8 years
(5).....8-12 years
(6).....12+ years
(7, 8).....Husband or wife dead or sick: Cause.....
(9, 10).....Contraceptive measures

FAMILY HISTORY

(1, 2).....Tuberculosis { Parents, Grandparents, Aunts, Uncles, Brothers, Sisters

(3, 4).....Cardio-Renal { Apoplexy or Stroke, Kidney Trouble, High Blood Pressure, Heart Trouble

(5, 6).....Cancer
(7, 8).....Diabetes
(1, 2).....Nervous or Mental Disease
(3, 4).....Tendency to Bleed Easily
(5, 6).....Goiter
(7, 8).....Disease Similar to Patient's

PAST HISTORY

(1, 2).....Serious Illness.....
(3, 4).....Accidents.....
(5, 6).....Operations.....
(7, 8).....Frequent Colds.....

IMPORTANT EVENTS BEFORE PRESENT ILLNESS

21—(1, 2).....Psychic Trauma
(3, 4).....Acute Infection
(5, 6).....Strain or Overwork
(7, 8).....Pregnancy or Childbirth
(9, 10).....Puberty
(11, 12).....Menopause

COURSE OF SYMPTOMATOLOGY

22—(1).....Progressive Increase
(2).....Periods of Remission: Duration.....
(3).....Progressive Decrease
(4).....No Variation

TREATMENT DURING PRESENT ILLNESS

(5, 6).....Iodine (7, 8).....Thyroid (9, 10).....Operation: Specify.....
(11, 12).....Other methods: Specify.....

PHYSICAL EXAMINATION

GENERAL APPEARANCE

23—(1).....Overdeveloped
(2).....Underdeveloped
(3).....Normal

(4).....Obese
(5).....Undernourished
(6).....Normal

(7).....Precocious Sex Development
(8).....Retarded Sex Development
(9).....Normal Sex Development

FIGURE 2. Page 2 of the special record of the Thyroid Clinic.

HAIR

24—(1, 2).....Loss from Head: Degree.....
(3, 4).....Loss Elsewhere: Degree.....

Texture

(5).....Fine
(6).....Coarse
(7).....Normal

EYES

(8, 9).....Bilateral Exophthalmos: Degree.....
(10, 11).....Unilateral Exophthalmos: Degree.....
25—(1, 2).....Lid Lag.....
(3, 4).....Other Eye Signs of Exophthalmic Goitre: Degree.....Specify.....
(5, 6).....Inequality of Pupils
(7, 8).....Oedema of Eyelids: Degree.....
(9, 10).....Poor Vision: Degree.....
(11, 12).....Abnormal Fundi: Describe.....

EARS

26—(1, 2).....Deafness: Degree.....

FACE

(3, 4).....Oedema: Degree.....

MOUTH

(5).....Cyanosis of Lips
(6).....Pallor of Lips
(7).....Normal Color of Lips
(8, 9).....Carious Teeth
.....Hutchinsonian Teeth

(10, 11).....Diseased Tonsils
- (1, 2).....Enlarged
- (3, 4).....Inflamed
- (5, 6).....Cryptic
- (7, 8).....Exudate
- (9, 10).....Large Tonsillar Glands
- (11, 12).....Other Abnormalities Specify.....

TONGUE

.....Coated: Degree.....
27—(1, 2).....Thick or Swollen: Degree.....
(3, 4).....Atrophy: Degree.....
(5, 6).....Tremor: Degree.....

LARYNX

(7, 8).....Aphonia or Hoarseness: Degree.....
(9).....Slow Speech
(10).....Rapid Speech
(11).....Normal Speech

NECK

Abnormal Venous Pulsations.....

Abnormal Arterial Pulsations.....

THYROID

Neck Measurement (in inches).....

Size

28—(1).....Normal
(2).....Slightly Enlarged
(3).....Moderately Enlarged
(4).....Greatly Enlarged

Shape

(5).....Symmetrical
(6).....Asymmetrical
(7).....Regular
(8).....Irregular

(9, 10).....Tenderness: Degree.....
(11, 12).....Fixation to Surrounding Tissue

Consistency

29—(1).....Soft
(2).....Medium
(3).....Hard
(4).....Uniform
(5).....Single Nodule
(6).....Multiple Nodules

(7, 8).....Displacement of Trachea: Direction
(9, 10).....Bruit: Location.....
(11, 12).....Thrill: Location.....

30—(1, 2).....Dilated Superficial Veins

THORAX

(3, 4).....Abnormalities of Chest: Specify.....

LUNGS

(5, 6).....Stridor: Degree.....
(7, 8).....Orthopnea: Degree.....
(9, 10).....Signs of Organic Disease: Degree.....

HEART

31—(1, 2).....Abnormal Pulsations
(3, 4).....Enlargement
(5, 6).....Sounds of Poor Quality
(10).....Normal Rhythm
(11).....Fibrillation
(12).....Other Arrhythmias: Specify.....

FIGURE 3. Page 3 of the special record of the Thyroid Clinic.

(7).....Tachycardia: Degree.....
(8).....Bradycardia: Degree.....
(9).....Normal Rate

32—(1, 2).....Thrill
(3, 4).....Valvular Disease
(5, 6).....Pericardial Disease
(7, 8).....Arteriosclerosis: Degree.....

EXTREMITIES

33—(1, 2).....Oedema: Degree.....
(3, 4).....Tremor: Specify.....
(5, 6).....Atrophy: Degree.....
(7, 8).....Structural Abnormalities: Degree.....
Specify Type.....

SKIN

34—(1).....Dry
(2).....Moist
(3).....Hot: Degree.....
(4).....Cold: Degree.....
(5).....Warm
(6, 7).....Flushing: Degree.....
(8).....Pale: Degree.....
(9).....Cyanotic: Degree.....
(10).....Normal Color
(11, 12).....Coarseness

GENITALS: Male

35—(1).....Overdeveloped
(2).....Underdeveloped
(3).....Normal
(4, 5).....Female Characteristics
(6, 7).....Other Abnormalities: Specify.....

Female

(8, 9).....Male Characteristics
(10, 11).....Other Abnormalities: Specify.....
(12).....Not Examined

PELVIC EXAMINATION

36—(1, 2).....Underdeveloped Uterus
(3, 4).....Fibroids
(5, 6).....Other Abnormalities: Specify.....
(—).....Not Done

SECONDARY SEX CHARACTERS

(7, 8).....Hair: Distribution of the Opposite Sex
(9, 10).....Voice of the Opposite Sex
37—(1, 2).....Breasts of the Opposite Sex
(3, 4).....Body Contour of the Opposite Sex

NEUROLOGICAL FINDINGS

(5).....Constant Activity
(6).....Lethargy, Drowsiness or Lack of Attention
(7).....Normal Activity
(8, 9).....Clouded Sensorium
(10, 11).....Psychic Manifestations

LABORATORY

38—Basal Metabolism.....
39—Pulse Rate.....
40—Weight in Pounds.....
41—Height in Inches.....
42—Systolic Blood Pressure.....
43—Diastolic Blood Pressure.....
44—Pulse Pressure.....

Red Count in Millions.....
Hemoglobin Per Cent.....
White Count in Thousands.....
Sugar Tolerance.....
Abnormalities in EKG.....

X-Ray of Chest and Heart
Intrathoracic Goiter
Enlarged Heart: Measurements.....

Laryngoscopic Examination:
Paralysis of Vocal Chords

***TREATMENT ADVISED**

45—(1).....Radiation
(2).....Iodine
(3).....Thyroid
(4).....Subtotal Thyroidectomy
(5).....Hemithyroidectomy
(6).....Excision of Nodule
(7).....Other Operative Procedures
(8).....Other Therapeutic Measures: Specify.....
(9).....Therapy Not Decided

Impression: .....

***More than one item may be checked; the negative of the items is not punched.**

FIGURE 4. Page 4 of the special record of the Thyroid Clinic.

(① on the card) and the Δ or 12 position (② on the card). Consequently there are 12 positions in each column.

The information on the record is divided into columns of 12 or less facts per column. The numbers in small type in the margins designate these columns. Each fact is then assigned a number, 1 to 12, corresponding to a definite position on the statistical (punch) card. The numbers are in large black type. Those facts which permit of three possibilities, and therefore recorded as single statements, are preceded by a double number, such as (1, 2), (3, 4), et cetera, the left hand number representing the positive (√) and the right hand number the negative or absence (o) of the corresponding fact. Where an item of information is represented by a group of possibilities, each possibility is preceded by a single number, such as (1), (2), et cetera. It is only lack of space on the card that prevents us from coding doubtful information. However, since each item is to be checked in every case, one can determine the number of times any given item is doubtful by subtracting the combined positive and negative instances from the total number of cases.

It is to be noted that in certain columns, namely those dealing with severity and duration of symptoms, and with laboratory data, the individual items are not printed, but the information is to be written in by the examiner. The transfer to punch cards is accomplished by special code, according to instructions as illustrated in figure 6.

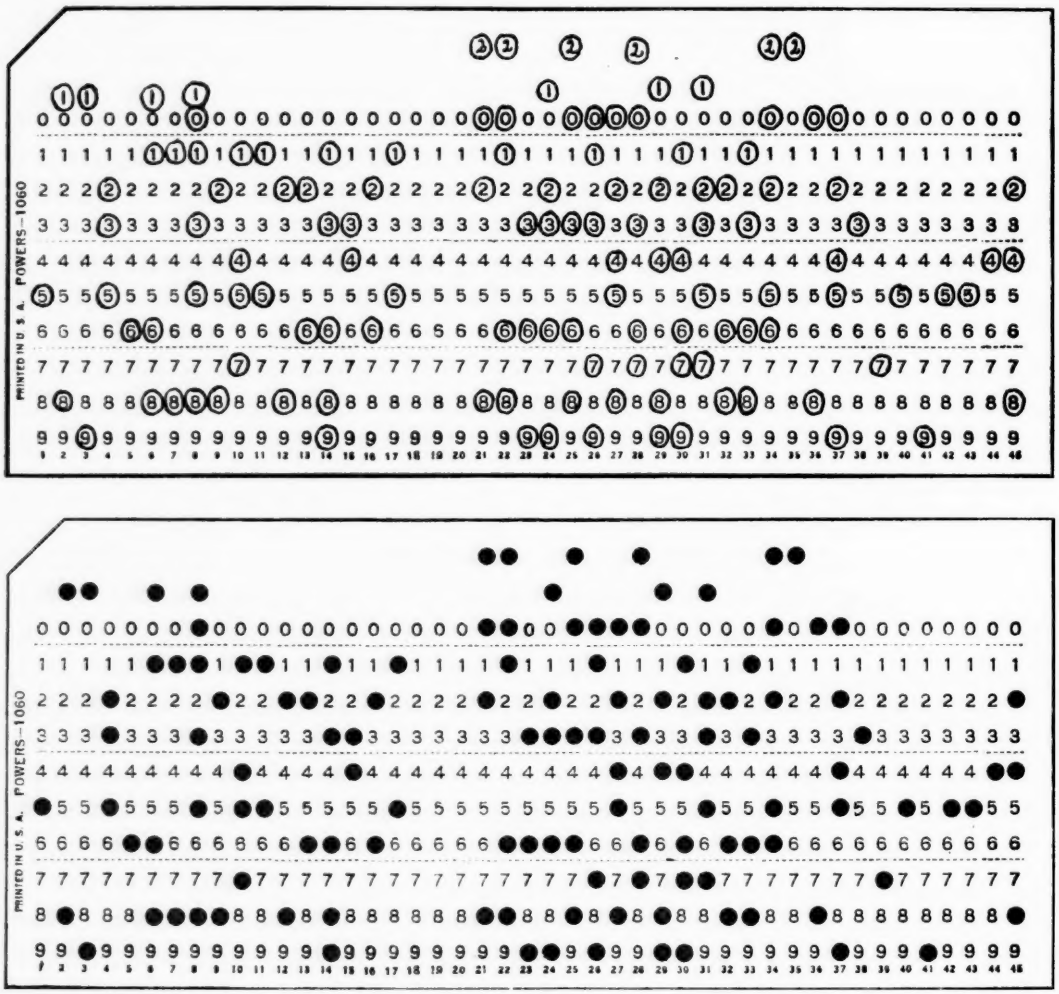

FIGURE 5. Specimen of circled card—at top—containing all the data of one case. Same card with perforations—at bottom.

The final step is to transfer the information to punch cards. The principle is to circle on the card (see figure 5) the numbers corresponding to those checked on the record. The first three columns are devoted to diagnoses. This permits the coding of a maximum of three diagnoses per patient, listed in the order of their importance. The diagnosis code suitable for the group of diseases studied is given in figure 7. Since there are more than 12 diagnoses, we have employed a method of double punching which permits us to code any one diagnosis in a sin-

GENERAL INSTRUCTIONS

Only positive and negative information is to be transcribed to punch cards. Doubtful information is not coded.

Where two numbers precede an item of information the left hand figure represents positive and the right hand figure negative information.

Only the numbers in bold face type are to be transferred to punch cards.

CODE

COLUMNS 1, 2 & 3 for Diagnosis
(see diagnosis code).

COLUMN 4 for Sex, Color and Civil State.

COLUMN 5 for Age:

(1)	under 10	(7)	35-39
(2)	10-14	(8)	40-49
(3)	15-19	(9)	50-59
(4)	20-24	(10)	60-69
(5)	25-29	(11)	70+
(6)	30-34	(12)	unknown

COLUMNS 6-22 for Facts of History:

Degree of Severity of Symptoms		*Duration of Symptoms*	
(1)	Mild	(4)	under 1 mo.
(2)	Moderate	(5)	1-4 mos.
(3)	Extreme	(6)	4 mos. - 1 yr.
		(7)	1-2 yrs.
		(8)	2-5 yrs.
		(9)	5-10 yrs.
		(10)	10+ yrs.
		(11)	unknown

COLUMNS 23-37 for Physical Examination.

COLUMN 38 for Basal Metabolic Rate:

Positive Readings (Per Cent)		Negative Readings (Per Cent)	
(1)	0-14	(8)	1- 9
(2)	15-29	(9)	10-19
(3)	30-44	(10)	20-29
(4)	45-59	(11)	30-39
(5)	60-74	(12)	40+
(6)	75-89		
(7)	90+		

COLUMN 39 for Pulse Rate:

(1)	under 50	(7)	100-109
(2)	50-59	(8)	110-119
(3)	60-69	(9)	120-129
(4)	70-79	(10)	130-139
(5)	80-89	(11)	140+
(6)	90-99		

COLUMN 40 for Weight in Pounds

(1)	under 75	(7)	150-164
(2)	75-89	(8)	165-179
(3)	90-104	(9)	180-194
(4)	105-119	(10)	195-209
(5)	120-134	(11)	210-224
(6)	135-149	(12)	225+

COLUMN 41 for Height in Inches:

(1)	under 36	(7)	60-62
(2)	36-41	(8)	63-65
(3)	42-47	(9)	66-68
(4)	48-53	(10)	69-71
(5)	54-56	(11)	72-74
(6)	57-59	(12)	75+

COLUMN 42 for Systolic Blood Pressure:
(mm. Hg.)

(1)	under 100	(7)	150-159
(2)	100-109	(8)	160-169
(3)	110-119	(9)	170-189
(4)	120-129	(10)	190-209
(5)	130-139	(11)	210+
(6)	140-149	(12)	unknown

COLUMN 43 for Diastolic Blood Pressure:
(mm. Hg.)

(1)	under 50	(7)	100-109
(2)	50-59	(8)	110-119
(3)	60-69	(9)	120-129
(4)	70-79	(10)	130-139
(5)	80-89	(11)	140+
(6)	90-99	(12)	unknown

COLUMN 44 for Pulse Pressure:
(mm. Hg.)

(1)	under 30	(7)	80- 89
(2)	30-39	(8)	90- 99
(3)	40-49	(9)	100-109
(4)	50-59	(10)	110+
(5)	60-69	(11)	unknown
(6)	70-79		

COLUMN 45 for Treatment Advised.

FIGURE 6. General instructions about the transfer of data to punch cards and special codes for numerical data.

DIAGNOSIS CODE

Thyroid Diseases

1 Diffuse Colloid Goiter—endemic
2 Diffuse Colloid Goiter—sporadic
3 Nodular Goiter with normal function
4 Nodular Goiter with hyperfunction
5 Exophthalmic Goiter
6 Cystic Goiter
7 Intrathoracic Goiter
8 Cretinism
9 Myxedema—permanent
10 Myxedema—temporary
11 Low metabolism—non-myxedematous
12 Cachexia Strumipriva
13 Malignancy
14 Thyroiditis (including Riedel's struma)
15 Developmental Abnormalities
16 All Other Thyroid Diseases

Other Endocrine Diseases

17 Pituitary Abnormalities
18 Parathyroid Abnormalities
19 Gonad Abnormalities
20 Other Endocrine Abnormalities (menopause, pregnancy, etc.)

Other Metabolic Diseases

21 Obesity
22 Malnutrition
23 Diabetes Mellitus

Other Diseases

24 Neurological conditions, effort syndrome, carcinoma, etc.

Special Groups of Diseases

25 Vitamine Deficiency: { Xerophthalmia, Beriberi, Scurvy, Rickets, Pellagra }
26 Liver Diseases
27 Blood Diseases
28 Cardiovascular Diseases
29 Acute and Chronic Infections
30 Skin Diseases (including scleroderma)

0 = 10
X = 20
0+X = 30
△ = Doubtful Diagnosis

FIGURE 7. The diagnosis code applicable to the group of patients studied.

gle column. Let 0 = 10 and X = 20. Then if 0 and 9 are punched at the same time, the number is 19. The same method is used to get numbers up to 30. If △ is punched with any other number the diagnosis is doubtful. In column 4 is recorded the sex, color and civil state; in column 5 age according to the code given in figure 4; in columns 6-22 the facts of the history; and in columns 23-37 the facts of the physical examination. The basal metabolism, pulse rate, weight, height and blood pressure are transferred to columns 38-44 according to the codes given in figure 6. In each of these columns one number only is circled. Finally, column 45 is devoted to treatment. In the latter instance, more than one number may be circled. It must be noted that a few items of the history, preceded by light-faced type, and some of the laboratory data on page 4 are not transferred to the statistical cards at the present time, but are available for future reference.

After the numbers on the cards are circled, a procedure which may be carried out at regular intervals, punched copies are made either by a hand machine or by an electric machine. Each circle on the card is thus replaced by a small perforation (see figure 5). The perforated cards can be used in the sorting machine for making tables. The use of the punch and sorting machines are described by Dayton[1]. This phase of the work requires specially trained technicians and is therefore best done in a special department, equipped to do it.*

DISCUSSION

The use of forms in records is not new. They have been used by many individuals and institutions to save time and make the records more complete. The use of the punch card system in clinical records was first recommended by Raymond Pearl[2] in 1921 and further amplified in his textbook[3]. It has been introduced into various branches of public health administration for the handling of statistical information and for research. It has been used extensively and with success by the Massachusetts Department of Mental Diseases since 1927, under the directorship of Dr. Neil A. Dayton[1], to obtain certain standard statistics and gross clinical data on patients. We have extended the method further to the detailed facts of the history and physical and laboratory examinations of a group of patients. In order to do this it was necessary to arrange the record form in such a way as to permit of easy transfer of the information to punch cards.

The faults of the average record are that the information is usually incomplete and that very often important negative information is omitted. Consequently the percentages calculated require a correction for the variable amount of unknown information. For purposes of study such records lose much of their value. The record form described, on the other hand, provides complete data for all factors to be studied and avoids the errors due to unknown information.

Anyone who has analyzed two or three hundred records will realize the difficulties involved and the time consumed in determining the frequency of various facts and the correlation of any one fact with another. When the number of cases reaches a thousand or more, it is almost impossible to do anything by hand sorting. The mechanical handling of data, on the other hand, permits the study of any number of cases as well as of a large number of facts per case without much difficulty and in a relatively short space of time. The frequency of the various facts is obtained in the first sorting of all the columns. Correlation tables require numerous sortings of the cards, but the number of correlations possible is innumerable. Consequently the analysis of clinical records can be made very comprehensive.

The method described is applicable, not alone to the study of material of a special clinic, but to that of the hospital in general. For example, a certain amount of standard information, including the routine part of the history and physical examination, may be transferred by code to part of the punch card and kept for the use of anyone wishing to study the case. Then the remainder of the card can be utilized for the further study of any special items not included in the standard data. A beginning in this direction was made by Dunn and Rockwood[4] in 1928 and also at the Children's Hospital in Cincinnati[5]. In the latter institution the record is so arranged as to permit transfer of the data to punch cards, but, so far as we know, the actual use of punch cards has not yet begun.

Moreover the mechanical method may be applied to the study of existing clinical and laboratory records even though the information is

*We have made use of the facilities of the School of Public Health, Harvard University, through the kindness of Drs. Wilson and Doering, to whom we are also indebted for many helpful suggestions.

partially incomplete. In such a study it is necessary first to examine a certain number of all the records to be studied (15 to 20 per cent) in order to obtain a rough idea of the available facts. Then a code is made to cover these facts, making certain to assign numbers to unrecorded as well as to recorded information.

To date, we have published one paper[6] dealing with data obtained by the special thyroid records and by the punch card method of analysis. Several other record forms and special codes have been constructed for members of the staff and others, to be used in the study of groups of diseases. A recent paper by Hanflig[7] contained statistics which were obtained by this method. The results of other studies will be published by various workers in the near future.

Several investigators have independently used the punch card system to analyze statistical data. Among them Locke[8], Walker[9] and Lund[10] have already published results obtained in this fashion.

SUMMARY AND CONCLUSIONS

The use of record forms in the study of cases of a single clinic and analysis of the data obtained by mechanical methods are described. Such a record, by obtaining both positive and negative information, is more complete than the usual record. It saves time for the examiner and facilitates the study of groups of cases.

The use of punch cards in the analysis of records allows the study of large numbers of cases comprehensively. Correlations, which otherwise would be impossibly complex, are obtainable in short order.

The more widespread application of such methods to the study of clinical and laboratory records is advocated.

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EARLY DETECTION OF PULMONARY TUBERCULOSIS*

BY HENRY D. CHADWICK, M.D.†

FOR years doctors serving in the tuberculosis field have urged the profession to make earlier diagnoses of tuberculosis. Notwithstanding this, little has been accomplished toward this end.

This is shown in a study made by the National Tuberculosis Association in 1926 covering the period 1914 to 1924. In 1914 the report showed that of the cases admitted to twelve sanatoria 10 per cent were minimal, 28 per cent moderately advanced and 55 per cent far advanced. Ten years later there was 14 per cent minimal, 27 per cent moderately advanced and 41 per cent far advanced. In 1928 another survey was made of 1500 sanatorium patients, and 12 per cent were admitted as minimal, 43 per cent as moderately advanced and 45 per cent as far advanced—very little change in the percentages during this fourteen year period.

The reason for the failure to get patients into sanatoria in the early stage of the disease was found to be due somewhat to the attitude of the patients themselves. Of the 1500 patients interviewed the average time elapsing between the first recognizable symptom and the first visit to any doctor was five months, and it was another five months before a definite diagnosis was given.

At the Herman Kiefer Hospital, Detroit, where approximately 1000 new patients are examined each month and the classification is made on the x-ray evidence instead of on physical findings, the ratio runs about 20 per cent minimal, 30 per cent moderately advanced and 50 per cent far advanced. The number of minimal cases admitted for treatment, however, was five per cent in 1929, six per cent in 1930 and 14 per cent in 1931. The discrepancy between the number of early cases diagnosed and number admitted is due largely to the difficulty found in convincing patients that they need institutional care before they are actually ill. They feel well, and although willing in most instances to accept the diagnosis they do not agree readily that institutional treatment is necessary. Too often they decide to try to get well at home and at the same time keep on with their work. This is human nature, and it is hard to combat. Health education that is purchased by experience is often dearly bought, but unfortunately it is the way many individuals choose to acquire it.

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Sanatorium patients who have successfully taken the "cure" and from personal experience have learned their lesson are the best teachers. They are often helpful in convincing an obstinate friend or relative that they should heed the doctor's advice. There are many cured ex-sanatorium patients in the community who are doing important missionary work in the anti-tuberculosis crusade. Their influence to this end is very great. They are keen in noticing symptoms of tuberculosis among their acquaintances and urging them to get examined, and if the doctor's opinion does not coincide with theirs they demand an x-ray examination and are not content until some one who is skilled in tuberculosis passes on the case. Cured patients are good advertisers for sanatorium treatment and the best promoters of public health work as it relates to tuberculosis.

Persons with small and early lesions require comparatively brief periods of treatment, and many more of them are cured. Consequently physicians specializing in tuberculosis have been reiterating the importance of early diagnosis. Refinements of the art of percussion and auscultation have been developed to an extraordinary degree. The result was that many persons without tuberculosis were wrongly diagnosed, given treatment and apparently cured of a disease they never had. Others with tuberculosis, in spite of the most careful physical examination, were not diagnosed until they had advanced disease. The family doctor has been much abused and the medical schools criticized for failing to teach their students how to make an early diagnosis. When, however, x-ray equipment became available we were provided with a method by which we could check our physical examinations. When this was done the results were very disconcerting. The roentgenogram came to the defense of the general practitioner and proved that he had been only a few degrees farther off from the true course than the ultra-trained specialist.

EVALUATION OF RÂLES, SLIGHT CHANGES IN BREATH SOUNDS AND IN RESONANCE

A few years ago in Massachusetts my associate, Dr. Roy Morgan, and I tabulated the findings on physical examination and compared them with the roentgenograms in a series of 2828 out-patients who were examined for pulmonary tuberculosis[1]. The study was very enlightening as showing the relative value of physical and roentgen examinations.

To escape bias in this study the physical examinations were made before the roentgenogram was seen and usually before the history was taken. The examinations were made by several different staff physicians, but they were all men of considerable experience in tuberculosis. We divided the physical signs into three groups:

1. Those showing breath changes or increased whisper, but with no râles.
2. Those showing râles with or without other signs.
3. Those showing no physical signs.

In all cases we refer only to auscultatory signs in the upper half of the chest. All signs in the lower half were disregarded. Cases with slight impaired resonance at the top of the lungs were classed as having no physical signs.

From the roentgenogram standpoint we classified them as positive or negative. Under positive we included only those cases showing definite parenchymal mottling or fibrosis. The results were as follows:

	No. of Cases	Breath Changes No Râles	Râles With or Without Breath Changes	No Auscultatory Signs
Roentgenogram Positive	440	84	277	79
Roentgenogram Negative	2388	271	25	2092

Breath Changes Only 24% positive
Râles 92% positive
No Signs 4% positive

The important things learned from this study were the following:

1. Breath changes without râles are very unreliable as a basis for diagnosis. In our series only 24 per cent of such cases were positive. In other words, a diagnosis based on these signs alone would be in error in 76 per cent of the cases. They are so unreliable that one should disregard such signs entirely unless they are very definite and accompanied by strong clinical evidence, and they should always be checked by a roentgenogram.

2. When râles were found in the upper half of the lung, tuberculosis was demonstrated by roentgenogram in 92 per cent of the cases. While apical râles are a good indication of tuberculosis, still it should be noted that they fail in 8 per cent when checked by roentgenogram. The roentgenogram while of great value is not infallible, as it is possible to have clinical tuberculosis that does not show in the film; but this is very infrequent, and these rare cases can be found if the sputum is examined for tubercle bacilli.

3. The tuberculous cases with no physical signs form an interesting group. Of our 440 positive cases, 79 showed no auscultatory signs. This means that we would have missed one out of six cases if the diagnosis had depended on the evidence obtained by the use of the stethoscope.

Most of these cases were minimal, but there was a small percentage of moderately advanced, and two that were classified as advanced. Of

the advanced cases, those of the bilateral chronic fibroid type are most commonly missed.

We were interested, also, to check the application blanks made out by physicians for the admission to the sanatorium of children they had diagnosed as having tuberculosis. We selected one hundred of the applications in which râles were recorded as being found in one or both lungs and compared them with our physical examination and a roentgenogram made at the sanatorium when the patient was admitted.

From our examination of these one hundred cases we classified 52 of them as having tuberculosis, two as having abscess of the lung, and 46 showed no evidence of pulmonary disease. On our examination of these same cases we found râles in only 44. Of these, 38 were found to be tuberculous, and six were classified as negative. Fifteen of the patients noted as having râles, and who had been diagnosed as having tuberculosis, did not even react to the tuberculin test.

The group studied would indicate that errors in diagnosis based on physical examination occur very frequently. In many instances the râles were evidently transitory, as they had disappeared by the time the patient was admitted. It is possible that transitory râles, not due to tuberculosis, are more common than we realize. It may be that many of the so-called râles were spurious. Râles are of considerable diagnostic value but not so infallible as we have thought. We should at least make certain that the râles are definite, that they are not spurious and that they are persistent.

Pulmonary tuberculosis in children and adolescents in its early stage is much more difficult to diagnose than it is in adults. For some unexplained reason râles are absent in a larger percentage of cases.

Morgan[2] of the Westfield State Sanatorium (Massachusetts) states that he found in a study of a group of cases of pulmonary tuberculosis admitted from 1910 to 1920, and which included only those with positive sputum, that 42, or 21 per cent, out of 197 showed no râles on physical examination. In another group admitted from 1920 to 1927 having definite roentgen evidence of pulmonary tuberculosis 54 out of 160, or 34 per cent, showed no râles. These studies would indicate quite definitely that a negative physical examination does not by any means preclude pulmonary tuberculosis.

The seriousness of delaying diagnosis in children until positive sputum is found is shown in the subsequent history of two hundred cases. A follow-up shows that but seven are known to be living, 152 are reported dead, and 41 are untraced. Of 49 cases with cavity shown by the roentgenogram at the time of admission, 45 are dead, 4 are living, three of them well and one in only fair condition.

In a study made by Zacks[3] of 110 children with pulmonary tuberculosis, of the average age of thirteen years, 54 per cent were diagnosed on x-ray evidence alone. They exhibited no symptoms or signs of disease. This is important to bear in mind, as it frequently happens that tuberculosis exists in boys and girls when they appear to be in excellent health.

How much significance should be attached to a history of contact?

In the Herman Kiefer Hospital Out-Patient Department we examine about one thousand new patients per month, and each one is questioned as to exposure to tuberculosis. To determine how much value should be placed on a positive or negative statement as to contact, a tabulation of the patients examined during the past twelve months was made with the following results:

CLASSIFICATION AS TO DIAGNOSIS AND CONTACT

	White	Colored	Total	Per cent
Adults				
Number of adults	6822	1838	8660	
Known contacts	3077	839	3916	45%
No known contacts	3745	999	4744	55%
Known contacts found tuberculous	455	135	590	15%
No known contacts found tuberculous	1042	341	1383	29%
Children				
Number of children	4424	1117	5541	
Known contacts	2378	711	3089	56%
No known contacts	2040	412	2452	44%
Known contacts found tuberculous	412	157	569	19%
No known contacts found tuberculous	249	80	329	13%

The above table shows that about twice as many adults with no known contact had tuberculosis (29%) as were found among the contact group (15%). The group of children, however, showed a slight preponderance of tuberculosis in the contact group (contacts 19%, non-contacts 13%).

It would appear from this study that too much emphasis has been placed on this point in history taking. We may conclude that history of contact is of some significance in children but of no diagnostic value in adults.

Further evidence of the elusiveness of tuberculosis in children is presented by Brachman[4] in a paper on "Prevention of Tuberculosis" which reports the examination of 35,000 school children, finding one in every 700 to have the adult type of pulmonary tuberculosis. In one high school 1400 were examined, and one per cent were found to have pulmonary tuberculosis. In this school a physical examination was given those students whose roentgenogram showed abnormalities. It was found that in the fourteen children with tuberculosis the nutrition was good or fair in all but four. Definite symptoms of disease were present in only three, a fourth

student having had a cold for one week. In only two were there definite signs found on physical examination. In two others slight signs were found that would warrant a further examination. Only one of the fourteen gave a history of contact in the home.

Note the absence of symptoms, physical signs and history of contact in most of these cases. This explains why many persons having tuberculosis do not go voluntarily to the doctor for examination. When health examinations become general the doctor will find these cases if he uses the tuberculin test and x-rays the reactors, but not otherwise. For not diagnosing more cases of tuberculosis in the past in its early stages, the doctors are not to blame, the patient is not to blame; it is the method that is at fault. We must search out the disease and not wait for signs and symptoms to become manifest.

The principal reasons for delayed diagnosis are these: Pulmonary tuberculosis may be present in well-developed and nourished persons without producing noticeable symptoms and therefore they see no reason to consult the doctor. When symptoms do appear they delay and try home remedies, and so months may intervene before the doctor has a chance to examine them. Then the physical examination may not be revealing or conclusive, and the patient may be kept under observation for many months more. Palliatives are tried until definite signs appear or positive sputum is found. Therefore, when a definite diagnosis of tuberculosis is made the disease is usually far advanced. Tubercle bacilli in the sputum usually mean that the disease has progressed beyond the minimal stage.

SUMMARY

In discussing the early detection of tuberculosis I have shown how difficult a problem it is. In minimal tuberculosis, symptoms are often slight or absent, and therefore the doctor is rarely consulted. When he is consulted, too much dependence is placed on the physical examination.

On auscultation, râles after expiratory cough will be found in about 90 per cent, but they may be found, also, in other forms of pulmonary disease. A slight decrease of impaired resonance is not reliable evidence. Slight changes in breath sounds, if present, only furnish corroborative evidence to support other abnormal findings.

History of contact is of some diagnostic significance in children but not in adults.

Symptoms of fatigue, loss of weight, poor appetite, frequent colds or cough lasting more than two weeks, and blood spitting are the symptoms that should demand investigation.

As a part of the examination a roentgenogram of the chest should always be made. It is the only way to avoid serious mistakes. If the physical examination reveals disease of the lung a roentgenogram is needed not only for confirmation but to show the extent and type of disease. If the physical examination is negative, a roentgenogram is of even more importance, as tuberculosis is often found in the absence of auscultatory signs.

Briefly, the way to detect early tuberculosis is always to think of it as a possibility in every person. Use a tuberculin test in all children up to fifteen years of age, and in some adults it is of value in differential diagnosis. Take a roentgenogram of all positive reactors in children and all other persons who are examined for pulmonary tuberculosis. Become skeptical of the value of the stethoscope in the diagnosis of pulmonary tuberculosis and put more faith in the roentgen ray.

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SUMMARY OF NEW REGULATIONS RELATING TO THE PRESCRIBING AND USE OF LIQUOR

EFFECTIVE MAY 15, 1933

The Physician holding a permit may prescribe any amount that in his judgment is required by the patient for 30 days or less. The prescription must state the frequency and quantity of dose, as well as the period of time the liquor is intended to last.

In unusual circumstances the Physician may prescribe from 31 to 90 days' supply but in such cases he must endorse "SPECIAL" on the prescription and notify the Supervisor within 24 hours. When the Druggist fills such a prescription he, too, must notify the Supervisor within 24 hours, stating the quantity and kind, period of time prescribed for, name and address of patient, as well as the name and permit number of the Physician.

In all cases the Druggist must make sure that the quantity he is dispensing, when taken as directed, does not exceed 30 days' need (or 90 days if a "SPECIAL") of that particular patient.

Physicians will continue to use the same prescription, Form 1403, although they must not write them in duplicate, since the form marked "DUPLICATE" may be used in the same manner as the "ORIGINAL." This means that the Doctor may write 200 prescriptions from each book.

The Physician is still required to keep the Form 1402 alphabetical record, wherein he must, in addition, indicate the period for which prescribed.

A new book of prescriptions may be obtained by the Doctor before his present one is exhausted, by detaching the back cover of his book and sending it to the Supervisor—the stub record to be sent in when the full book has been used.

(Continued on page 1151)

NEW ENGLAND SURGICAL SOCIETY

ERYTHROBLASTIC ANEMIA—CASE REPORT*

BY DAVID W. PARKER, M.D.†

SURGEONS whose work includes to any extent surgery in children not infrequently see cases of splenomegaly associated with definite blood changes and anemia. The question always arises as to whether removal of the spleen will be of benefit.

In order to arrive at a correct conclusion on this, a reasonably accurate diagnosis is essential.

Some of the conditions associated with splenomegaly and anemia are easily identified, while others are very confusing except to those men who have made an intensive study of the subject.

The case which I am reporting, I believe, belongs to the latter group.

This child was admitted to the Balch Hospital, Manchester, N. H., Nov. 21, 1931, studied, and his spleen was removed. The pathological diagnosis was Gaucher's disease. He made a good recovery and was discharged on January 19, 1932.

After this, the family moved to New York City. An unsuccessful effort was made to trace them, and nothing was heard from them until June 10, 1932, when a letter was received from the King's County Hospital, Brooklyn, stating that this child had been admitted to that institution, and requesting information about the case. This information was furnished, and on June 22, a letter was received from the hospital stating that they believed this to be a classical example of Cooley's Erythroblastic Anemia, and referred us to "a comprehensive exposition of the entire subject of Baty, Blackfan, and Diamond," which appeared in the March, 1932 issue of the *American Journal of Diseases of Children.*

This disease was entirely new to us. We were unable to find any literature on the subject which was definite, with the exception of articles by Cooley and the one by Baty and Blackfan. We also found that only 46 cases had been reported in the literature and that 20 of these were from the clinic of Baty and Blackfan, and were reported in March, 1932.

This article describes the disease as a disturbance of the hematopoietic system which comes on during infancy and early childhood, and is confined to the Mediterranean races, and also is familial. It is characterized by yellowish pallor of the skin and a typical Mongoloid facial appearance, a severe anemia with leukocytosis, large numbers of nucleated erythrocytes in the peripheral blood, and marked variation in size and shape of the red cells; also, after splenectomy, a remarkable permanent increase in the number of these nucleated erythrocytes, a much enlarged spleen which causes the abdomen to become very prominent, x-ray findings of rarefaction and increased trabeculation of the medullary portion and a marked thinning of the cortex of the long bones; in the cranial vault, increase in the depth of the bony structure. The outer table becomes thin and porous, and the diploe seems to extend beyond the outer table, giving an appearance like "hair standing on end."

The pathological picture is that of extensive hematopoiesis, both in the bone marrow and spleen.

It is a chronic disease of variable severity and duration, and none of the cases reported have survived childhood.

This fact, also, would seem to distinguish it from von Jaksch's anemia, which has only a low mortality.

Splenectomy, except in a few cases, has not seemed to be of any benefit.

REPORT OF CASE

G. G., American-born male Greek child, six years of age, was admitted to the Balch Hospital, Manchester, N. H. November 21, 1931. He complained of weakness, dyspnea on exertion, nausea and vomiting after eating although he stated that he had not vomited for two months. Had never vomited blood. Also complained of headaches. Bowels regular. Slept well.

PAST HISTORY: Birth weight 9 lbs. Full term normal baby, breast-fed for six months. Well during first year of life. Has been sick since one year of age. Has had measles and whooping cough, none of the other communicable diseases.

FAMILY HISTORY: Father and mother living and well. Four other children living and well. None dead. No maternal miscarriages. Negative to disease.

PHYSICAL EXAMINATION: Child is well developed and poorly nourished. Weight 47 lbs., about 12 lbs. underweight. Peculiar lemon color to skin. Some yellowishness of sclerae. Pupils are equal, regular, and react to light. Tonsils moderately large, not remarkable. Very high narrow arch. Several necrotic teeth. Bilateral tonsillar glands. Many posterior and anterior cervical glands, small. Ears are normal. Heart shows no enlargement or murmur. Lungs are resonant, sounds are normal, no râles. Some interscapular dullness. Liver is palpable about two fingerbreadths below the costal margin. There is a mass in the left flank, apparently the spleen. This lies close to the surface and has a sharp edge, not tender, freely movable and extends around into the flank. Abdomen is very prominent, apparently no ascites. Some small inguinal glands, no axillary glands. Epitrochlear glands on both sides. Has a left inguinal hernia, very large ring. Knee jerks are normal. No abnormal reflexes.

Blood examination on entrance showed R. B. C. 2,496,000; W. B. C. 9,400; hemoglobin 42%.

*Read at the Annual Meeting of the New England Surgical Society at Hartford, Conn., October 1, 1932.

†Parker—Surgeon to Elliot Hospital, Manchester, N. H. For record and address of author see "This Week's Issue," page 1171.

On November 24, his W. B. C. rose to 16,450. He was negative to human and bovine tuberculin.

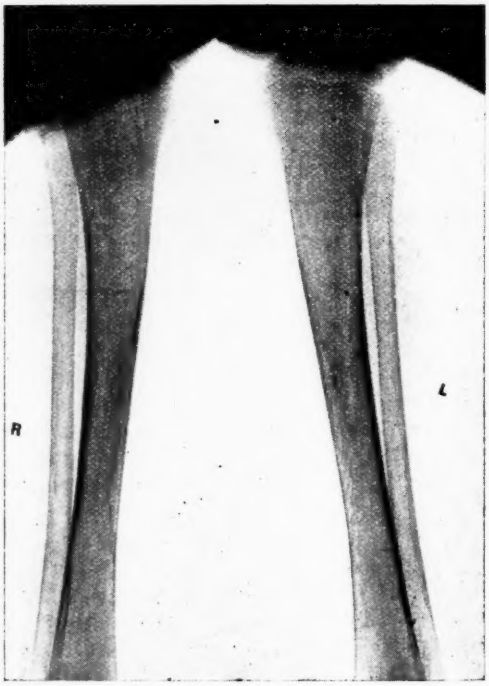
On November 26, stained film of blood showed differentials 185. Polymorphonuclears 156; transitional lymphocytes 15, eosinophiles 12, nucleated

reds 27, myelocytes 5. Very marked variation in the size of the red cells. No reticulated red cells. Urine was very dark "apparently bile although unable to get test with iodine."

Wassermann's test was negative.

On November 30, a transfusion of 250 cc. of whole blood was given. Following this, the hemoglobin rose to 52%; R. B. C. 3,110,000; W. B. C. 10,750.

On December 10, a splenectomy was performed. At operation, the spleen was found to be enlarged four or five times normal size with a very deep notch



on the anterior edge, firm in consistency, and bluish-red in color. The liver was also much enlarged and the left lobe was found to extend well over into the left side of the abdomen.

The child made an uneventful recovery from the operation.

On December 15, blood count showed R. B. C. 3,339,000; hemoglobin 44%.

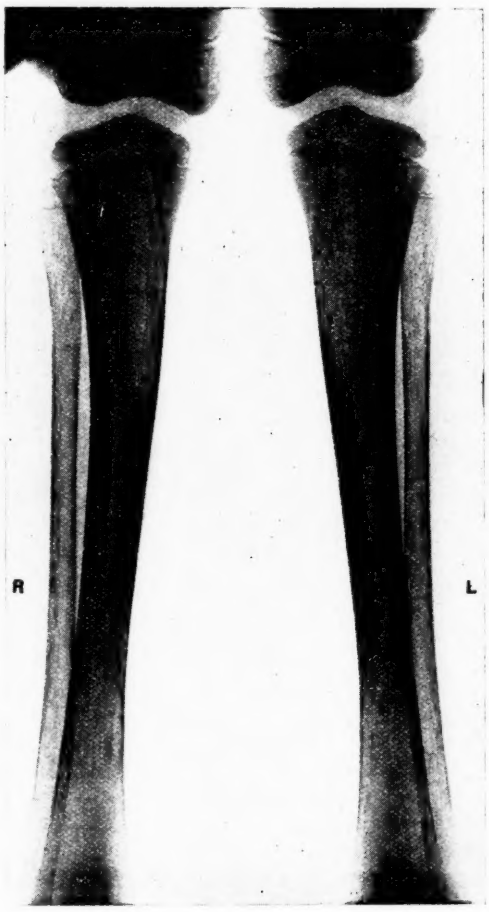
On December 21, there is a note that urobilin was not present in the urine.

On December 22, a stained blood smear showed very marked variation in size and shape of red cells; numerous myelocytes; marked variation in stain of red cells. The polys were 41; lymphocytes were 38; transitionals 5; eosinophiles were 11, and the nucleated reds were 117. There is a great deal of immaturity in all of the cells.

On December 23, there is a note that it is extremely difficult to make a W. B. C. on account of the tremendous amount of nucleated reds.

On December 24, transfusion of 275 cc. of whole blood given.

On December 30, very marked jaundice. General



condition good. Eats fairly well and does not complain of anything subjectively.

On January 8, x-rays of the long bones, pelvis, and skull were taken. Report by Dr. A. S. Merrill states:

"Negatives of the long bones show a general appearance of deficient calcification with very thin cortex and coarse irregular trabeculations. Both tibiae show oblique or nearly longitudinal lines suggesting incomplete fractures. The pelvis shows similar but less marked changes. The appearance is similar to that seen in Osteogenesis Imperfecta, and is probably a metabolic change."

Following the operation December 10, the spleen was sent to the Department of Pathology, Dartmouth Medical School, and the following pathological report was received:

G. G. Aged 6. Balch Hospital.

GROSS EXAMINATION: Specimen consists of a spleen, weighing 270 grams and measuring 21 cm. by 10 cm. by 5 cm. Fetal lobulations are increased (Grade II). The consistence is decreased (Grade I), and wrinkling is increased (Grade I). The capsule is pinkish gray. There are three small lymph nodes at the hilus. The section surface of the spleen is reddish brown with lymphoid markings very prominent. Trabeculations are apparently decreased. The lymph nodes at the hilus, on section, are seen to have nodules about the periphery which are continuous with each other and which are of increased consistence, and project slightly above the cut surface. They are translucent.

MICROSCOPICAL EXAMINATION: Sections of the spleen contain in the pulp cords large clear cells with small nuclei. The cytoplasm of the cells is very much like that of xanthoma cells, appearing foamy. These cells are collected in masses in some areas but in no place is it definitely demonstrable that

they are within the splenic sinuses. The Malpighian corpuscles contain large "germinal centers" of the active type. There is some brown pigment scattered throughout the section. Staining of the sections of the spleen for fat reveals that the content of these clear large cells is non-lipoid in character.

PATHOLOGICAL DIAGNOSIS: Gaucher's Splenomegaly.

(Signed) R. E. Miller, M.D.

The subsequent progress of the case is reported through the courtesy of the Pediatric Department of the King's County Hospital, Brooklyn, N. Y. The child was admitted to this hospital on June 6, 1932 because of weakness and yellow skin. The parents reported that after discharge from the Balch Hospital, he showed gradual improvement until one month ago when he suffered from a discharging gland in his neck which healed spontaneously. He then grew progressively weaker and vomited occasionally.

In a letter of June 22, 1932, Dr. Fries, Resident Pediatrician, states: "Our findings on G. do not differ essentially from yours except that his anemia is increasing. (R. B. C. 1,200,000; hemoglobin 10% [Dare], nucleated red cells 6,800; reticulocytes 6%). His icteric index rising (I. I. 60) and his general condition extremely grave. We have investigated the other children in the family and find that a younger child, C., aged 3, also presents a picture of advanced Cooley's Anemia."

On July 16, another letter was received requesting a slide of the spleen for examination by their path-

ologist, and stated: "The patient died after three weeks' stay in our hospital. During this time, he became markedly cachectic. He showed characteristic x-ray findings in skull and long bones. Blood findings were those of marked anemia, large numbers of nucleated red blood cells and moderate resistance. Platelet count was normal."

The course of the disease, as taken from the hospital records, was as follows:

"Course: The patient ran a spiking temperature (peaks varying from 102 degrees to 106 degrees F.) the pulse and respirations corresponding. At first, there were no complaints, but later a cramp-like abdominal pain developed, the patient demanding the bedpan frequently but usually with no results. Later a true diarrhea with two or three bloody movements at the onset, commenced and lasted until the end. The patient's color deepened and skin, sclerae and mucous membranes became definitely yellow. The heart sounds were of poor quality, though regular, and in addition to a systolic murmur, there was a loud diastolic at the second and third spaces just to the left of the sternum. The pulse was of the collapsing type. The blood pressure read 70/0. There was no cyanosis, orthopnea, edema, or liver tenderness. There was increased thirst and some frequency. Urine negative. The family refused to permit transfusion. The patient became weaker, more dyspneic and somnolent, vomiting everything given by mouth. He died June 25, 1932.

Autopsy was refused. The microscopic pathology of the spleen was reported by Dr. W. W. Hala as suggesting an anemia of the erythroblastic type."

COMMENT: This is undoubtedly a case of Cooley's erythroblastic anemia as described by Baty and Blackfan.

It is an interesting fact that the child improved following his discharge from the Balch Hospital until some time in May when he had a suppurating gland of the neck and directly following this, his condition became rapidly and progressively worse. Whether this intercurrent infection was an influencing cause for the rapid termination of the case is, of course, a matter for conjecture. I believe that it is a reasonable hypothesis. At least, it is recognized that infections exert a very serious influence in this disease. It was suggested by Dr. Baty that the cause of death might have been thrombosis of the mesenteric veins, a condition which was found on case No. 3 of his series. That child died with similar symptoms.

This case is presented because erythroblastic anemia is a rare and apparently recently recognized clinical entity, and is perhaps, imperfectly understood except by those who have made an intensive study of the anemias of infancy and childhood.

Discussion

Dr. James M. Baty: *Mr. President and Members of the Society*—I cannot add a great deal to Dr. Parker's description of this case, which fully illustrates the condition that we call erythroblastic anemia, a purely descriptive term.

I thought it might be interesting to show you a few slides from our patients which simply stress features which Dr. Parker has brought out. In the photographs I should like to have you notice particularly that these children, all Greek, Italian, Syrian, or Armenian, look very much like each other.

(Slide)* These were two brothers of Greek parentage. This boy actually is larger, but the photograph is taken a little nearer to the younger boy. This shows the mongoloid type of facies, prominent frontal bosses and wide-set eyes. The area of the enlarged spleen and liver is marked out on the abdomen.

(Slide) This child shows a very similar facial appearance. Notice, too, that these children are underweight and malnourished.

(Slide) These were twins of Greek parents. They were eleven months' old at the time of these photographs. The frontal bosses stand out particularly. The mongoloid faces are produced apparently by the changes in the bone, which we will show by x-ray.

(Slide) This is a chart of the blood counts of one patient. The dark line the leukocytes, and the broken line the nucleated red blood cells in the peripheral blood. The leukocyte count varied from 20,000 to 60,000, and the number of nucleated red blood cells from 5000 to 15,000. The spleen was removed. Following splenectomy a tremendous increase in the number of nucleated erythrocytes occurred and persisted until we lost sight of the patient two years later.

(Slide) This x-ray of the hand shows very well the characteristics of the bone changes as shown in x-rays. That is, a generalized osteoporosis and increased trabeculation which was present in all of the bones, a widening of the total bone area with marked thinning of the cortices. This thinning of the cortices is so marked that there may occur what are called spontaneous fractures, or fractures following slight trauma. Two children we saw at the City Hospital, around fifteen years of age, showed something like twenty or thirty healed fractures in the x-rays of their long bones.

(Slide) This x-ray of the feet is from one of Dr. Cooley's patients and shows the same things that we have seen in Dr. Parker's patient and in the other x-ray, the thinning of the cortices and marked diminished density of the bones.

(Slide) This is an x-ray of the skull from a patient rather early during the course of the disease. All we see is a thickening of the bones of the skull, a little bit more marked in the frontal and parietal regions, as was shown also in Dr. Parker's case.

(Slide) This shows a little better the type of thing that we associate with the more advanced stages as described by Dr. Parker, hair standing on end. Extending outward from the inner table there is this porcupine-like stria-

*No slides were submitted with this report.

tion of bone with almost complete destruction of the outer table. I think these x-rays with the story of Dr. Parker's case fairly well illustrate the disease.

Dr. David Cheever, Boston, Mass.: May I ask, if it were just hematopoiesis going on in the spleen, why did the reds increase so much immediately after the removal of the spleen?

Dr. Baty: I do not believe we can answer your question, Dr. Cheever. We think of the disease as being primarily a disturbance of hematopoiesis, primarily involving the bone marrow. We think the x-ray changes are simply secondary to a hyperplastic, actively growing marrow in a young individual whose bones are not entirely fixed. What effect the spleen has on controlling the outflow of cells from the bone marrow into the circulation we do not know. We suppose that this effect must have something to do with the tremendous reaction after splenectomy. We know that after splenectomy in any individual there is a transient increase in young red cells, in the leukocytes and in the platelets with a rapid return to normal within about two weeks. In this condition the number of platelets and young red blood cells tends to remain constantly elevated. We think splenectomy is contraindicated because of the danger of spontaneous thrombosis. The platelet count may be around a million constantly after splenectomy and, of course, thrombosis is likely to occur at one place or another.

Closing Discussion by Dr. Parker: I have nothing further to add except that I wish to express my appreciation to Dr. Baty for his kindness in coming here to discuss this case.

SUMMARY OF NEW REGULATIONS RELATING TO THE PRESCRIBING AND USE OF LIQUOR

(Continued from page 1146)

Druggists may now fill prescriptions within 7 days from date of issuance. Forms 1410, application for permits to purchase, do not have to be notarized.

The Pharmacist will follow the same procedure and keep the same records as in the past, although it will not be necessary to record the strip stamp number in receiving or dispensing. The canceled prescriptions are to be retained by the Druggist and not filed with the Supervisor.

The Druggist will continue to keep the record Form 1421, in duplicate, the original to be filed with the Supervisor and on it must be indicated, below line 21, the number of the prescriptions, filled for whiskey, brandy, gin or rum of more than 1 quart each, and the number of prescriptions filled for wine of more than 1 gallon each.

KINDS OF LIQUOR THAT MAY BE PRESCRIBED

Sec. 3. Only spirituous and vinous liquor may be prescribed for medicinal purposes. The term "spirituous liquor" shall be construed as alcohol, whiskey, brandy, rum, gin, and such like liquor produced by distillation. The term "vinous liquor" shall be construed as wine containing more than 3.2 per centum of alcohol by weight, being the fermented juice of the grape, and such berries as are commonly used in the production of wine.

Sec. 4. Prescriptions for any liquor other than spirituous and vinous liquor for medicinal purposes shall be void. The following preparations listed in the United States Pharmacopoeia and National Formulary classed as fit for beverage purposes are held to be spirituous liquors and must be prescribed in the same manner and under the same conditions as spirituous liquors:

Elixir aromaticum (elixir aromatic)
Elixir anisi (elixir of anise)
Elixir aromaticum rubrum (red aromatic elixir)
Elixir surantii amari (elixir of bitter orange)
Elixir cardamoni compositum (compound elixir or cardamon)
Elixir glycyrrhizac (elixir of licorice)
Elixir glycyrrhizae aromaticum (aromatic elixir of glycyrrhiza)
Elixir taraxaci compositum (compound elixir taraxacum)
Elixir terpini hydratis (elixir of terpin hydrate)
Spiritus aetheria (spirit of ether or Hoffmann's drops)
Spiritus myrciae compositus (compound spirits of myrcia)
Tincture amara (bitter tincture)
Tinctura aromatica (aromatic tincture)
Tinctura auranti dulcis (tincture sweet orange peel)
Tinctura limonis corticis (tincture of lemon peel)
Tinctura zingiberis (tincture of ginger)

ISSUANCE OF PRESCRIPTIONS

No physician shall prescribe liquor unless after a careful physical examination of the person for whose use such prescription is sought, or if such examination is found impracticable, then upon the best information obtainable, he in good faith believes that the use of spirituous or vinous liquor as a medicine by such person is necessary and will afford relief to him from some known ailment. It is suggested that in determining the quantity to be prescribed, the physician inquire of the patient concerning the quantity of liquor, if any, recently prescribed for the patient by other physicians.

These provisions will apply unless your State or local law specifies to the contrary and previous regulations will continue in effect except as amended.

METHYLENE BLUE IN THE TREATMENT OF POISONINGS ASSOCIATED WITH METHEMOGLOBINEMIA*

(Report of Two Cases)

BY CHARLES W. STEELE, M.D.,† AND WESLEY W. SPINK, M.D.†

RECENT investigations have revealed the value of methylene blue in the treatment of experimental cyanide and carbon monoxide poisonings. Wendel[1] has reviewed the explanations put forth by various observers in regard to the action of methylene blue in cyanide poisoning. Sahlin[2], Eddy[3], and Brooks[4] believe that in cases of cyanide poisoning the dye acts by providing a substitute for the normal cellular catalysts of respiration which have been inactivated by the cyanide. Combemale[5], Wendel and Shaffer[6], Warburg, Kubowitz and Christian[7], and Hug[8] contend that the intravenous injection of methylene blue results in the formation of methemoglobin, and that the latter fixes the hydrocyanic acid as stable cyanmethemoglobin and thus prevents the cyanide from exerting its toxic effects on the body cells.

Brooks[9] has shown experimentally with animals that methylene blue administered in carbon monoxide poisoning is effective in reducing mortality. Geiger[10] has reported two cases of cyanide poisoning and one of inhalation of natural gas or of natural gas combustion products, in which recovery followed the intravenous injection of 50 cc. of a 1 per cent solution of methylene blue. In one case of carbon monoxide poisoning, 150 cc. of the dye was required before the patient was permanently returned to consciousness.

We present in this communication two cases of poisoning which showed the presence of methemoglobin in the blood on entry to the hospital. Both cases were given an intravenous injection of a 1 per cent saline solution of methylene blue, with resultant recovery. The case summaries are as follows:

CASE I. A 39 year old Italian milkman stated that three and one-half hours before entry he drank a red liquid which he thought was wine, and which tasted oily. Two hours later he felt weak and was told by a druggist that he was markedly blue in color. When first seen in the ward he was rational and oriented, and, though apprehensive, was able to converse with attendants. The temperature was 97.8°; the pulse was 120; respirations were 23. The systolic blood pressure was 70 mm. Hg. and the diastolic pressure 40 mm. The patient's skin was moist, cold, and grayish-blue-brown in color; even the retinal vessels were bluish-brown. There was an odor on the breath similar to that of an anilin oil. Heart, lungs, and abdomen were normal. The patient's stomach was immediately washed out and considerable oily material, which gave off an odor resembling that of an anilin oil, collected on the surface of the fluid contents. In spite of this treatment the patient became steadily more grayish-blue in color, and sank into a semistuporous condition from which he could be roused only with difficulty. There was profuse perspiration. The condition of the patient was considered grave by a number of experienced observers.

Thirty minutes after entry the patient was given one-half (0.5) gram of methylene blue pills by mouth. There was no improvement in his color or mental condition forty-five minutes later, except that the blood pressure rose to 90 mm. Hg. systolic and 50 mm. diastolic. A solution of 50 cc. of methylene blue was then injected intravenously. Fifteen minutes later the patient was sitting up talking to his relatives and said that he now felt perfectly well. His skin and retinal vessels were only faintly discolored. Within thirty minutes the blood pressure rose to 130 mm. Hg systolic and 70 mm. diastolic; temperature was normal; and the pulse dropped from 120 to 90 per minute. Blood taken from the vein before methylene blue injection was chocolate-brown in color, gave off an odor similar to that of an anilin oil, and revealed a methemoglobin band spectroscopically. Blood taken from the vein one hour after the injection of the dye was the usual color of venous blood. The rest of the blood examination and the urine examination were negative. The patient was discharged as well two days after entry.

CASE II. A 45 year old, white, married salesman was brought to the accident floor deeply cyanosed, muttering incoherently. The pulses were just palpable. The skin was cold and clammy, the pupils were widely dilated, and the respiration was gasping and labored. He was thought to be suffering from the effects of a poison, and because of the necessity of immediate therapy, a complete physical examination was not carried out.

Treatment instituted was as follows: Because of the patient's cyanotic condition and dyspnea, carbon dioxide and oxygen were administered by means of a mask. As no improvement resulted, a stomach tube was then inserted and the stomach washed out with a solution of starch. Little change was noted after this procedure. Blood taken from a vein in the arm was of a dark chocolate-brown color and showed the presence of methemoglobin by spectroscopic examination. One hundred cc. of a 0.5 per cent solution of methylene blue in saline was then administered intravenously. After 50 cc. had been injected, the patient sat up on the examining table. The change in his condition was dramatic. Fifteen minutes after the entire amount of methylene blue had been injected he was much less cyanotic and answered questions quite intelligently. His pulses were stronger, and respiration was definitely improved. He vomited occasionally, the vomitus being of a blue color, whereas previously it had been of a white starchy color. Spectroscopic examination of the blood showed no methemoglobin band. One hour after the administration of the methylene blue he showed only a trace of cyanosis and was emphatic in his desire to go home.

He then presented the following history: About 7 P.M. on the night of entry he visited a tailor shop which was operated by a friend of his, and was given three drinks. He thought that it was "whiskey ex-

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tract", in alcohol, and noted nothing unusual about it, except that it was highly flavored. He left the shop in half an hour feeling no ill effects. Shortly after reaching the street, however, he became drowsy and weak, losing the power to use his legs. He rapidly lost his faculties and fainted. The police found him in the street and brought him to the hospital where he was first seen by the service at 9:30 P.M., approximately two and one-half hours after he had taken the drinks.

A complete physical examination following treatment revealed negative findings except for abrasions over the right eye and on the left knee. His skin was warm and of a normal color. Blood pressure was 95 mm. Hg. systolic and 75 mm. diastolic. Pulse was 100 per minute. An x-ray of the chest taken the next morning was negative. Laboratory examination before the administration of methylene blue, and examinations twenty hours and seventy-two hours after administration gave the following results; urines negative; slight leukocytosis on entry; normal blood chemistry, including total non-protein nitrogen, creatinine, uric acid, and blood sugar. He was discharged as well four days after entry.

Chemical examination of stomach washings on Case II, done by Dr. F. H. Laskey Taylor of the Thorndike Memorial Laboratory, showed ethyl alcohol present; acetanilid present (by four different methods); and methyl alcohol, anilin, nitro-benzene not present.

DISCUSSION

Both patients treated with intravenous injections of methylene blue had ingested poisons which caused grayish-blue cyanosis, stupor, and chocolate-colored blood with positive spectroscopic test for methemoglobin. In the first case the vomitus was not analyzed; in the second case the analysis revealed acetanilid in large amount. The condition of both patients was considered serious, but, within fifteen minutes after the administration of the dye, there was a disappearance of cyanosis, a return to consciousness, and the methemoglobin band was absent in the second case, while the blood of first patient was normal in color.

Some investigators are of the opinion that after the injection of methylene blue intravenously in cyanide poisoning, methemoglobin is formed which combines with the cyanide to form non-toxic cyanmethemoglobin. Others believe that the dye acts as a substitute for the normal cellular catalysts of respiration. In these cases of poisoning with methemoglobinemia here presented, two possibilities for the explanation of the action of methylene blue are (1) the dye may combine directly with the poison to form a non-toxic compound which is excreted; (2) the poison may combine with hemoglobin to form methemoglobin, but the dye, acting as a catalytic agent, may accelerate the reversal of this process.

CONCLUSION

The intravenous injection of methylene blue solution was followed by prompt recovery in two cases of acute poisoning, one unidentified, and the second caused by acetanilid, both having methemoglobin in the blood before treatment.

We are indebted to Dr. Soma Weiss for his valuable advice, and to Dr. Frank Otis for suggestions in carrying out this work.

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THE FOLLOW-UP OF GONORRHEA AND SYPHILIS IN PRIVATE PRACTICE*

BY N. A. NELSON, M.D.†

THE necessity for discussing the follow-up of gonorrhea and syphilis in private practice is evidence that there is some unusual obstacle to their control through the usual administrative procedures. To the theorist, sitting safely at his desk, there is no reason why these diseases should not be managed as any other communicable disease. He insists that one need only to remember that they are communicable

*From the Massachusetts Department of Public Health.

Read at Albany, N. Y., September 22, 1932, for the New York State Department of Health, Continuation Study Conferences for Nurses and Social Workers.

AUTHOR'S NOTE: This paper is not intended as adverse criticism of the unusually good follow-up of delinquent patients now being done in Massachusetts by many health officers. It is intended rather to suggest a procedure which in time may make direct official epidemiology unnecessary. So long as clinic follow-up service continues in its present state of inadequacy and so long as the private practitioner is left without assistance in the problem of keeping his patients under treatment and of identifying and bringing to medical attention contacts and sources of infection, the health officer will perforce be called upon to fill these gaps. It is frequently necessary, until more nearly ideal procedures can be established, to rely upon less desirable methods.

The health officers of Massachusetts have on the whole willingly and intelligently followed the cases which have been of necessity referred to them.

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diseases, and to forget their moral implications which, in many cases, do not apply. But the health officer who must ring the delinquent patient's doorbell without arousing the curiosity of the family, or who has just advised an examination to an indignant "source of infection," discovers that a natural human desire to avoid discovery of sex irregularity is not so easily brushed aside by an idealistic wave of the hand. Perhaps even the theorist might resent the appearance in his office of a report of syphilis or gonorrhea carrying his wife's or sister's name, no matter how plainly it might be labeled "innocent".

Gonorrhea and syphilis are easily hidden and readily driven to cover. The general application of quarantine or isolation is, for many obvious reasons, entirely impracticable. The correct name and address of the patient are often difficult to ascertain. Our only hold on the patient is in his trustworthiness and his confidence in us. Almost every attempt at treatment by compulsion adds only to the evidence of its futility.

There are three factors which influence the medical control of gonorrhea and syphilis. The first is the early discovery of new infections; the second, regularity and adequacy of treatment; and the third, conduct of the patient. Regularity of treatment depends largely upon the care with which its importance has been explained to the patient, and his ability to pay. The one is the responsibility of the physician in charge of the case and of the health officer through popular information. The other will depend upon the willingness of the medical profession to adjust its fees, and the availability of free treatment for those who cannot afford even the physician's lowest fee. Adequacy of treatment will depend upon the degree to which the medical profession informs itself concerning the proper management of gonorrhea and syphilis, as well as upon such improvement in therapeutics as may result from sound and prolonged research.

The conduct of the patient will in most cases depend on how well he understands the nature of his infection and his responsibility for not passing it on to others. The entire instruction of the patient, except as the health officer may provide informative material, is the responsibility of the physician who is treating the case, and of his assistants. It is as much a part of the medical problem as the actual technic of administering therapy.

It has been proved time and again that in those clinics where competent, interested social service is available, lapses from treatment, and conduct which exposes others to infection may be reduced almost to the vanishing point without the intervention of the health officer. It should not be necessary to point out that no health officer or other official investigator who may be called into the case temporarily can enjoy the confidence of the patient to the extent that it is enjoyed by the physician and social worker who have been interested in him from the beginning. In the rare instances where a good clinic has had to refer a difficult case to the health officer the usual end-result of official intervention has been no more satisfactory than if the patient had been allowed to go his own way in the first place. By far the majority of cases referred to health officers for follow-up could have been handled directly by the clinic if there had been the proper initial understanding between the clinic and the patient. When the health officer is called into the case the idea of compulsion and of insecurity simply adds to the uneasiness of the remainder of the patients in the clinic.

Regularity and adequacy of treatment and the conduct of the patient, therefore, must be the concern of the medical profession and its social assistants, and not of the health officer. Unfortunately the physician lacks the social service which is so essential to the proper conduct of the clinic. The patient who is so "unfortunate" as to have enough money to pay a physician is penalized, theoretically, by having to submit to follow-up by the health officer. I say "theoretically" because physicians rarely report their delinquent patients. This is perhaps more to their credit than otherwise. One function of the clinic social worker is to accomplish results through gaining and keeping the patient's confidence. Yet we often complain because the physician so carefully guards the secrets of those whose very existence in the community may be jeopardized by an official investigation of a lapse from treatment. Our first official problem becomes, therefore, that of somehow providing for patients in private practice the same considerate follow-up service that we are so loudly insisting upon for the clinic patient.

The second official problem is that of finding new cases as soon after the date of infection as possible. This involves, besides public education, the identification of as many contacts with, and sources of infection of, as many known cases as possible. This latter form of epidemiological control of disease depends upon one thing—the personal interview of the patient.

The epidemiological investigation following a case of typhoid fever or of smallpox or of diphtheria or of tuberculosis is a well-established official procedure. It is accepted as a reasonable health department function by the medical profession. It serves as an important method of cleaning up the residue not accounted for by sanitation, vaccination and toxin-antitoxin. But every such investigation must begin with the patient. Unless the patient can be identified there can be no investigation. Public policy, the natural shrinking of the patient with gon-

orrhea or syphilis from the public view and the physician's proper hesitation to expose his patient to official interview, constitute a real barrier to the identification of the majority of these patients to the health officer. It is obviously impossible for him to proceed with the search for contacts and sources of infection. It is true that in a few instances, notably among those patients who have no standing in the community; prostitutes, etc., the health officer may be given an opportunity to act. But as a generally applicable administrative procedure there is little to be hoped for in this direction. It is clear that the solution of the problem of finding new cases lies in working through the only individual who knows the patient. That individual is the patient's physician. Somehow, then, a service must be provided which will serve the double purpose of helping the private physician to keep his patients under treatment and to reach back to the contacts and sources of infection without requiring the official identification of the patient. It is not strange that administrators have turned to social service as a method, since this service is solving the problem in the clinic.

There is no reason why the health officer cannot carry on the epidemiological investigation of syphilis and gonorrhea if he will stop insisting upon doing it by old methods. Let him stop begging the problem to be reasonable and shape his procedures to the problem. This is not so difficult as it appears at first glance. All that is required is that he relinquish the unimportant privilege of identifying the patient. This can be accomplished by offering the physician the services of a communicable disease nurse or social worker. She should represent the physician rather than the official agency, and work out of his office. The same result is attained as if she walked out of the health office in the first place with the name and address of the patient in her hand.

The physician, however, is not accustomed to using a trained investigator in his private practice. In other communicable disease the work is done directly from the health office for and through the patient with little or no participation by the physician. Most physicians are unfamiliar, to say the least, with social service. It is our experience in Massachusetts that simply to offer this service to physicians is to meet with almost complete failure. So far as I can learn, this has been the experience of other health officers. We have found it necessary to ask a few physicians who are approachable because of their clinic associations and their interest in the control of gonorrhea and syphilis, to give the service a trial. Our social worker called upon twenty-three of them and succeeded in interesting six. For these six she has followed seventy-one cases.

Her success in securing cases for follow-up varies with the interest which the physician himself has in the continued treatment of his patients and in the discovery of new cases. The service consumes a great deal of time and applied to the whole of private practice will become enormously expensive. Viewing the vast sums which have been spent in the epidemiology of tuberculosis, however, we hope that the future may provide funds for the control of gonorrhea and syphilis more nearly commensurate with their importance to the public health.

Of the seventy-one individuals followed, fifty-three were referred by one physician, and seven by another. The remaining eleven were divided among the other four physicians. Forty-seven (24 males and 23 females) had lapsed treatment for gonorrhea, and five (three males and two females) had lapsed treatment for syphilis. There were nine alleged sources of infection of gonorrhea (three males and six females) and one alleged source of infection of syphilis (a female). Four males were followed to complete diagnosis, two of gonorrhea and two of syphilis. Four family contacts were followed, two for gonorrhea and two for syphilis. One female was followed for operation for pus tubes.

No definite note was made of the reasons for lapsing treatment. It is the impression of the social worker, however, that as she talked with the patients there seemed to be two major influences at work. One was the decision on the part of the patient that he had had enough treatment. The other was economic. Since the majority of cases were gonorrhea, the conclusion that the disease was cured when the symptoms disappeared is understandable.

In the one physician's practice, of the sixteen males lapsing treatment for gonorrhea, fifteen were returned, thirteen of them to the referring physician. All of the fifteen female patients lapsing treatment for gonorrhea were returned, eleven of them to the referring physician. Four of his five patients with syphilis were returned to treatment, two of them to him. One could not be located. Of the entire thirty-six delinquent patients only four required more than one contact, one requiring three visits and three requiring two visits each. All of these patients are still under medical care or have since been discharged as cured.

In this physician's practice seven of the eight alleged sources of infection of gonorrhea were examined, six by him and one by another physician. All seven are under medical care. The eighth could not be found. The single source of infection of syphilis was examined by the referring physician and is still under medical care. Her husband and brother were discovered, in the process of the investigation, to have lapsed treatment, one for syphilis and the other for gonorrhea. Both were returned to medical care. The four family contacts were examined and found to have no disease.

Of the eighteen individuals, all of them with gonorrhea, referred by the remaining five physicians, eleven were returned to treatment and are still under medical care. Six of the eleven returned to the original physician; the others to clinics or other physicians. Two could not be located and four are still being followed by the social worker. In following one of the patients an unreported gonorrheal ophthalmia neonatorum was discovered and the mother and father are being followed as sources of this infection. The eighteenth individual was an alleged source of infection who was examined by the referring physician and referred to a clinic where she is receiving treatment.

These are good results. However, in spite of this demonstration of the value of social service, only one of these physicians makes a point of calling in the social worker on new cases. The others are content to wait until she calls on them to ask for more work to do. Further, in only two instances has she been permitted to interview a patient for the identification of the source of infection or to arrange for the examination of family contacts. In all other cases she has simply accepted the names offered her by the physician. Consequently her services are not nearly so valuable to these physicians as those of the clinic social worker who deals with the patient directly.

One physician questioned the patients who returned to him concerning their reactions to the visit of the social worker. In only one case was there any objection and in many others the positive statement was made that they appreciated this unusual interest in their welfare on his part. It must be made clear at this point that the social worker approached all the cases as the representative of the physician and not as of this department. Except for statistical summaries, the Department has no information concerning the work she has done; that is, it would be impossible for us to identify a single one of the individuals she has followed.

It must also be made clear that the social worker took no action in any case except as she was directed by the physician. If the patient was unable to pay for further treatment, the physician decided whether or not he should be referred to a clinic. If any further social investigation was indicated, it was made only if agreed to by the physician. In other words, the social worker was completely the agent of the physician and proceeded only in accord with his directions, even though in doing so she might have left things undone which needed doing or even might have been required by the Department's regulations. This is very important, for unless the physician may have complete confidence that he is directing the affairs of his own practice and is not losing patients unnecessarily to public clinics or being steered into social situations that make for trouble, he will soon dispense with the service.

How this service may be extended to the entire medical profession of the State is a problem which will require careful consideration. It will be accomplished only through the best of salesmanship. Obviously highly trained, tactful workers with personalities which do not grate upon the physician or his patients must be employed. The service cannot be legislated nor regulated upon the physician. It must be "sold" to him in the first place as an idea worth trying and then in terms of results. Whether this would be possible under the isolated supervision of the several hundred local boards of health in the State is a question. How long it would take for the community to identify the worker as the investigator of gonorrhea and syphilis also requires thought. Whether the work could be done through existing nursing agencies must be considered. How far some unscrupulous physicians would go toward using the social worker or nurse as an agent for putting pressure on patients who had not paid their bills must also, unfortunately, be taken into account. The medical profession will profit considerably from the return of old patients to treatment and the acquisition of new ones. Should the physician, then, assume some financial responsibility for this service? Or can it be offered to him without charge because it is for the control of communicable disease? Boards of health quite generally provide nursing follow-up for other communicable diseases, including tuberculosis.

Finally, shall it be offered as anything more complete than simple communicable disease follow-up? If it is to assume the proportions of social service, it will be far more time-consuming and expensive. In some cases both the physician and the social worker may find themselves with difficult problems on their hands.

The sailor who named a certain girl to a clinic social worker as the source of his infection with gonorrhea did not suspect that the resulting investigation would disclose that she also was pregnant and that he would be required by a court to support the baby. The young man who disclosed the source of his infection as an avowedly promiscuous fifteen-year old girl did not realize that subsequent social investigation would expose him to a charge of rape. The patient who was a party to the practice of sodomy and who named the source of infection regrets the confidence that landed him in jail. The prostitute who led the social worker to as many of her contacts as she could resented the interference of the police with her profession.

Other sailors, learning of the disaster which befell their shipmate, will refuse information as to the sources of their infections. Other young men will beware of the confidences which will subject them to charges of rape. Prostitutes who name their contacts and admit their

business and get into trouble with the health officer or the police will become silent on the matter of the spread of their infections. Either we must be willing to close our eyes to many social problems for the sake of discovering and bringing to medical care as many infections as possible, or we must expect eventually to defeat ourselves.

For years we have begged people to seek medical care at the least suspicion of infection with gonorrhea or syphilis. When they have come to medical attention we have had another struggle to keep them under long, expensive and discouraging treatment. All this effort can be brought to naught by a multitude of simple things. Technical faults which cause pain, failure to take the patient into our confidence concerning the nature of the disease and what its treatment means in time and patience, abruptness, lack of sympathy, and boredom, are some of the things that drive him away. We can neither afford to threaten, nor to attempt compulsion. All he needs to do is to disappear. It is like trying to win the confidence of a mouse with a little cheese and a lot of patience and then wondering why he hesitates about coming out of his hole when we swing at him with a club when he dares stick his nose questioningly out into the air.

It is my opinion that whatever success we may have in the control of gonorrhea and syphilis through direct epidemiology will depend upon how much of it can be done through the physician and his social assistants, however those assistants may be supplied. It will depend upon how successful we are in gaining the patient's confidence and in keeping it even though in many cases we meet with small success. Certainly we shall be tortured by a case here and there which remains out of control in spite of the best that we can do. But the same amount of time that is so often wasted in what eventually proves to be a futile attempt to master a difficult situation may be much better used in the discovery of other hundreds of cases just as dangerous to the community. Most of them would be controllable if they could but be discovered.

PREGNANCY COINCIDENT WITH CIRRHOSIS OF THE LIVER

Report of a Case

BY BENJAMIN TENNEY, JR., M.D.,* AND RICHARD B. KING, M.D.*

THE extraordinary rarity of the coexistence of cirrhosis of the liver and pregnancy justifies this report. The records of the case are unusually complete, and are of great interest in view of the work now being done regarding the toxemias of pregnancy. A careful search of the literature reveals no report of a similar case. There are, however, reports of two cases in which cirrhosis of the liver was discovered during pregnancy. Scaglione[1] reported the case of a twenty-five year multipara whose previous pregnancies had been uneventful. During the reported pregnancy the patient complained of rather marked indigestion. In the eighth month premature labor set in. During the second stage of labor an uncontrollable hematemesis occurred, despite which delivery of a normal infant took place, followed by death of the mother. Postmortem examination showed Laennec's cirrhosis of the liver, with esophageal varices, ascites and splenomegaly. Kraul[2] reported the case of a multipara thirty-eight years of age, whose two previous pregnancies had been normal, eleven and nine years before. Seven months prior to the reported pregnancy the patient developed a pleural effusion, followed by a chronic cough. When six months pregnant she developed jaundice, vomiting and diarrhea, with sudden increase in the size of the abdomen. During the seventh month the patient entered the hospital. At that time she showed jaundice and ascites, enlargement of the liver and spleen, acholuric stools and bile in the urine. Both the lungs and larynx showed tuberculosis. Seven weeks later a normal baby was delivered after three hours of an uncomplicated labor. Within a few days both the jaundice and the ascites disappeared. The puerperium was uneventful, but two months later examination of the patient revealed that the liver and spleen were still much enlarged. Kraul drew the following conclusions from the case: "We must leave the question open as to whether the cirrhosis of the liver existed prior to the pregnancy or whether it did not manifest itself until pregnancy supervened, or by virtue of it. No definite conclusions can be drawn from this case as to whether pregnancy causes an exacerbation or a remission of a cirrhosis of the liver, or whether there is no effect at all."

CASE REPORT. A married American housewife of thirty was referred to one of us (B. T., Jr.) in May, 1930, at which time she was four months pregnant. In 1923 the patient was examined in a Boston clinic because she was complaining of painful joints. At that time it was noted that her liver was easily palpable at the right costal margin, the edge being smooth. The spleen was not felt. In 1925 she had her first attack of infectious jaundice following a

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febrile attack of coryza and sore throat. She was kept in bed on a very low carbohydrate diet for six weeks, and it was three months before the icterus had entirely disappeared. For the next two years, aside from considerable gas and sour eructations, she was free from symptoms. In 1927, without any known preceding infection, she again became jaundiced with marked malaise, anorexia and nausea. These symptoms reached their maximum in two weeks, at which time she consulted a surgeon. An x-ray examination showed fixation of the first and second portions of the duodenum. There were no visible gallstones. After another two weeks, during which time there was no decrease in the icterus, an exploratory laparotomy was performed. The gallbladder and all its surrounding tissue were found to be normal, as were the stomach, duodenum and common bile duct. The liver was large, with a definite "hob-nail" surface. The appendix was removed. The postoperative diagnosis was "Acute Yellow Atrophy of Infectious Origin with Early Sclerosis of the Liver." A week later the patient developed sufficient ascites to burst open the abdominal incision, was delirious, and more deeply jaundiced than ever. There was massive edema of the legs and feet. She gradually improved, so that five weeks after the operation she was able to go to a convalescent home, where she remained for three weeks. While there she had a sudden, marked diuresis with almost complete disappearance of her jaundice, ascites and edema. The records show that she lost nine pounds in twenty-four hours. Following this her general improvement was striking, and in another three months she was feeling as well as she ever had. She did continue to have a variable amount of indigestion, but no icterus and for the next three years was quite well. She had gone through three months of pregnancy when we first saw her, with considerable indigestion and an occasional sensation of abdominal bloating.

Physical Examination. Aside from some ankylosing arthritis, the only significant abnormalities found were in the abdomen. The liver was easily palpable two fingerbreadths below the right costal border, the edge being smooth and non-tender. The spleen was not felt. The pregnant uterus reached half-way to the umbilicus. There were marked varicose veins with slight pitting edema of both ankles. There was no evidence of either jaundice or ascites.

Laboratory Data. An uncatheterized specimen of urine showed the slightest possible trace of albumen. The blood Wassermann reaction was negative. The blood counts and smears were negative save for a very moderate degree of secondary anemia. The icteric index was normal.

Course. The patient was determined to go through with the pregnancy regardless of the risk, which seemed to us considerable. She was given a very high carbohydrate, low protein diet (carbohydrate about 350 grams, protein about 50 grams), her activity was somewhat restricted, and she reported to one of us every two weeks. The course of events was relatively uneventful; from time to time she complained of headache, nausea, rare vomiting, slight edema and occasional blurring of vision, but at no time did she appear ill; she never showed any significant albuminuria, and her blood-pressure never rose above systolic 115, diastolic 90.

During the ninth month of pregnancy, when the fetus was considered to have an excellent chance of survival, a Caesarean section with sterilization was performed under spinal anesthesia. The liver was found to be enlarged, and on the inferior surface there were felt four or five elevated nodules, each about five centimeters in diameter. The superior surface was roughly granular, with definite scarring. The operation and convalescence were without complications, and the baby, a male weighing 5 lbs. 10 oz., thrived. Both mother and baby were discharged on the eighteenth day.

Six months later the patient reported for examination. She declared that she never had felt so well, had no indigestion whatsoever, had been eating whatever she wished, and had been less bothered by her arthritis than for several years. The baby was seen and appeared in excellent health, weighing 16 pounds. Physical examination of the mother revealed the liver still easily palpable two fingerbreadths below the right costal margin; the spleen was not felt. There was no evidence of ascites, jaundice or edema.

The patient was again seen in April, 1932, eighteen months after delivery. She reported that she had been extraordinarily well. During the year she had had six severe headaches following dietary excesses, promptly relieved by vomiting; otherwise there had been no indigestion. She had gained seven pounds and looked very well. Physical examination showed the liver palpable three fingerbreadths below the right costal border; it seemed definitely larger than at any previous examination. The spleen was not felt. The rest of the examination was negative.

Two years after delivery the patient reported that aside from some discomfort from her joints, she fel as well as she ever had in her life. She had experienced several headaches from occasional overeating, but had not been bothered with any indigestion. She was leading an active, normal life.

SPECIAL LABORATORY DATA

The table shows the various laboratory studies made in the case, at different intervals. The first tests, made three months antepartum in an effort to determine the extent of liver damage, were all essentially normal except for the sugar tolerance curve. This showed an absence of the usual transient hyperglycemia seen in individuals with normal liver function. The blood fatty acids were definitely increased above normal, though whether the damaged liver was responsible is open to question, since the pregnancy alone could account for such an increase[3].

The second series of analyses were made one hour before delivery. The extremely high level of the fasting blood fatty acids suggests that at that time the liver was beginning to show the effect of the superimposed pregnancy. Two weeks postpartum this level had fallen to that of three months antepartum. Both the adrenalin fatty acid and sugar curves, which will be discussed later, were distinctly abnormal, and pointed to considerable liver insufficiency despite the removal of the burden of pregnancy. Six months later the curves had become much more normal, though still suggesting definite liver damage. It is unfortunate that we were unable to obtain curves eighteen months postpartum, but it is unlikely that further change has occurred since the last analyses.

Discussion: In view of the findings in our patient, it is instructive to review briefly the recent work on the function of the liver during pregnancy, with especial reference to the rôle it may play in the production of toxemia. The

Rosenthal[4] test has been used in several obstetrical clinics in an effort to determine its value as regards impending toxemia. The results have been confusing. In a large series of patients later developing toxemia, Smith[5] found that only one-half had previously shown an abnormal Rosenthal test, but that this group had more severe symptoms and a higher mortality than did the group in whom the test had shown normal liver function. He thus concluded that a negative test was not necessarily reassuring. Berman[6], in a series of 20 patients, all of whom later developed convulsions, found that only ten had shown abnormal liver function. Siegel[7] concluded that the test was a better guide than blood-pressure determinations in impending eclampsia. Rosenfield and Schneiders[8] found abnormal tests in cases of severe toxemia; the amount of liver insufficiency shown was in proportion to the clinical state, and there was a rapid return to normal coincident with relief of the patients' symptoms. Cross[9] felt that while the Rosenthal test was the best one available, its limitations should be recognized, in view of the fact that nearly any of the complications of pregnancy could cause a positive test. Jones[10], in work now being done, feels that the level of fatty acids in the blood, both fasting and after the injection of adrenalin, furnishes a much more sensitive index of liver insufficiency than do other tests.

In normal individuals one sees a sharp rise in the blood fatty acids one-half hour following the injection of adrenalin, followed by a return to normal during the next hour. This curve is very similar to the blood sugar curve following the injection of adrenalin. In the case under consideration, the fatty acid curve obtained two weeks postpartum shows a continuous rise in fatty acid values in a peak in two hours. Jones usually finds this type of curve in individuals showing only a moderate degree of liver damage. The curve obtained in our patient six months postpartum shows a tendency toward a return to normal, though still indicating abnormality.

Several interesting conclusions may be drawn from this case. The actual onset of the cirrhosis could not be determined, but there was evidence that the liver was enlarged for at least seven years before the complicating pregnancy. The relationship between acute upper respiratory tract infection and infectious jaundice seems clear in this case, and in the light of our present knowledge regarding the dietary treatment of patients with acute liver damage it is probable that the low carbohydrate diet prescribed for this patient was a definite factor in prolonging her first attack of jaundice for as long as three months. The extraordinary diuresis experienced by the patient during her postoperative convalescence is to be regarded as an indication of reasonably good liver function, once the acute trouble had subsided. The dietary treatment accorded this patient during her pregnancy may have been a considerable factor in maintaining at an adequate level the function of her liver, but the complete absence of any evidence of toxemia suggests, contrary to the opinion of many workers, that the liver does not play the major rôle in the production of toxemia.

SPECIAL LABORATORY DATA

	3 months antepartum	1 hour antepartum	2 weeks postpartum	6 weeks postpartum
Rosenthal Test	Normal			
Sugar Tolerance*	82-112-109-112			
Van den Bergh	Negative			
Blood Fatty Acid	434 mgm.	703 mgm.	441 mgm.	402 mgm.
Non-Protein-Nitrogen	20 mgm.			
Renal Function	45%			
Icteric Index	2	5		
Blood Sugar	82 mgm.	78 mgm.	81 mgm.	93 mgm.
Clotting Time		9 min.		
Bleeding Time		2½ min.		
Blood Grouping		III		
Adrenalin Sugar Curve†			81-133-137-88	93-136-140-102
Adrenalin Fatty Acid Curve†			441-451-488-576	402-469-451-450
Adrenalin Cholesterol Curve†				188-194-200-185
Fasting Blood Cholesterol		186 mgm.		
Blood Wassermann Reaction	Negative			

*The "sugar tolerance" curve was obtained by a fasting blood sugar determination, followed by the oral administration of 100 grams of glucose, samples of blood being taken thereafter at half-hourly intervals. The figures represent milligrams of sugar per 100 cc. blood.

†The "adrenalin" curves were obtained by taking fasting samples of blood, followed by the intramuscular injection of 0.5 cc. of a 1:1,000 solution of adrenalin chloride, with subsequent blood determinations at one half-hour, one hour, and two hours. The figures represent milligrams per 100 cc. of blood.

SUMMARY

1. A case of proved cirrhosis of the liver, complicated by pregnancy, is reported.
2. A search of the literature reveals no similar case.

3. Detailed laboratory data, with special reference to the liver function, are presented.
4. It is of particular interest that at no time was there any evidence of toxemia.

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TETANUS WITH AN UNUSUAL EARLY SYMPTOM

A Case Report

BY PEIRCE H. LEAVITT, M.D.*

THE object in reporting this case is to draw attention to a lone symptom of tetanus which may confuse the diagnosis, especially in the presence of old minor injuries.

G. H. Surgical No. 13,659, a boy 13 years of age, white. Father, a farmer. Patient seen by Dr. A. V. Smith of Middleboro for the first time on May 26, 1932, and referred to the Goddard Hospital, Brockton for abdominal symptoms. The patient's father stated that three days before admission the boy complained of gradually increasing pain in the epigastric region, accompanied by moderate vomiting. The pain was not constant, and the boy attended school the day before admission. The night before he was very uncomfortable. Vomiting had stopped but there was nausea. Soreness in the right lower quadrant had gradually developed. No abnormal urinary symptoms were noted. The bowels moved well until yesterday. Some gas was passed by rectum yesterday and today. There was no history of chill, headache or sore throat. The past history was essentially negative.

Physical examination showed a well-developed and nourished boy, lying in bed, suffering with occasional cramp-like pains in the abdomen, lasting a few seconds, and referred to the epigastrium, but the epigastric region was not tender. There were tenderness and resistance and the suggestion of a mass in the right lower quadrant. The left side of the abdomen was soft and not tender. The rest of the abdominal examination was essentially negative. The extremities were negative. The urine showed an occasional w.b.c. and very rare r.b.c. amber, alkaline. Sp. gr. 1024. No sugar or albumen, w.b.c. 15,000. A small enema was given with expulsion of gas, but no fecal result.

Preoperative diagnosis: acute appendicitis or Meckel's diverticulum.

Operation May 26, 1932. Avertin and gas ether. Right rectus incision. No increase of free fluid. Appendix four inches long, distal ¾ inch hard and red, engorged. No fibrin. Moderate irregular distention of small intestines. Large bowel moderately distended. No abnormal mass or twist. No evidence of diaphragmatic hernia. The appendix was removed. Wound closed, sponge count correct.

Diagnosis: Acute appendicitis (probably subsiding). Pathological examination (healed appendix).

May 27. Good recovery from anesthesia. Continued to have attacks of occasional irregularly timed abdominal pain, mostly centered about the wound.

May 28. Nausea and vomiting today. No relief from enema. Enterostomy advised and done. Abdominal cavity at this time showed about the usual amount of distention to be expected 48 to 60 hours after a laparotomy. Original wound perfectly clean.

May 29. Cramps still present, but no increase, came about every 20 to 30 minutes. General supportive treatment given, subpectoral salt, etc. Occasional vomiting. Enterostomy working well.

May 30. About 2 A.M. suddenly complained that he could not open his mouth to drink water. Some slight stiffness of neck was found. A.T.S. given under the skin and in spinal canal, 20,000 units in all. Some reaction necessitating adrenalin[1, 2]. Later, avertin for convulsions (this worked so well we would certainly use it in other cases[3]).

Upon the appearance of recognizable symptoms of tetanus[4, 5] the past history was again studied. We were then able to obtain a story that five or six weeks previous to the abdominal symptoms a splinter entered under the nail of the left mid-finger.

The patient removed the splinter himself, but the area became mildly septic. A doctor was consulted, and the pus evacuated. The patient then told him about a wound from a B.B. shot received in the right thumb, six or seven years ago. The shot could be felt under the skin and the doctor removed it. This wound became mildly septic, but healed well, and, when I examined it, it was in a normal condition with no swelling or tenderness, nothing more than one would expect to see on any boy's hand.

The boy did not show evidence of so-called local tetanus, no twitching even at the height of the attack[6, 7]. This type would be more apt to appear in a case with this long incubation period, and should have been localized near the wounds on the finger.

We must assume that the finger and thumb were the source of the infection. The classical symptoms of tetanus were not present until very late, the only symptoms for days were limited to the abdomen. Fortunately the incubation period was very long.

The patient had a stormy convalescence for three days after the onset of tetanus symptoms, muscle pain, spasm in extremities and back, and bladder symptoms. These gradually disappeared, and he was discharged relieved, sixteen days after admission. He was seen in the office in July, and presented nothing abnormal. Both abdominal wounds healed well.

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GENERAL SPINAL ANESTHESIA: REPORT OF A CASE

BY GEORGE M. SAUNDERS, M.D.*

GENERAL spinal anesthesia for work on the head and neck has been recorded in medical literature[1, 2, 3], but it is probably still of sufficient interest and rarity to warrant recording the following case.

During the last six months of 1930 the author was in charge of the Firestone Hospital at Gedatarbo, Liberia, West Africa. There was no assistant capable of giving anesthesia, hence local, nerve block, or spinal anesthesia was used when any extensive surgery was to be done. Approximately 100 cases were given spinal anesthesia during this time, attempting to control the height of the anesthesia according to the method of Stout and his co-workers[4, 5, 6] with admirable success. This method depends upon three factors for its success. These are (1) the amount of anesthetic agent used, (2) the amount of spinal fluid withdrawn to be reinjected, (3) the length of time taken for reinjection. It might be of interest to note that in this series of cases not one death occurred which could possibly be ascribed to the anesthesia, and in no case except the one recorded below was any substance such as adrenalin or ephedrin used to maintain blood pressure level. In many cases the blood pressure must have fallen considerably during the anesthesia as evidenced by the condition of the patient and the pulse, but unfortunately blood pressure readings could not be taken due to lack of equipment and assistants.

A native boy, probably 10 years of age, weight 60 pounds, came to the dispensary with large swellings on each side of the neck. On examination, these seemed to be typical, extensive tuberculous glands with some fluctuation. Examination also revealed a probably tuberculous process in the upper half of the right lung, but it was decided that the boy would have a better chance of battling the pulmonary tuberculosis if he were rid of the focus in his cervical glands. Neck dissection was decided upon and spinal anesthesia seemed to be the only choice of anesthetics. There was no one to give inhalation anesthesia, the author was not sufficiently familiar with rectal anesthesia (and the ether supply was almost exhausted) and local anesthesia was not considered advisable due to probable lack of coöperation of the patient and risk of spreading the infection and obscuring the field.

After a few days' rest in bed the patient was prepared for operation, simply cleaning out his intestinal tract with magnesium sulphate, 48 hours before the proposed time of operation, and increasing the fluid intake to at least two litres a day. After the usual skin preparation with tincture of iodin, spinal puncture was done in the third lumbar interspace with a No. 22 spinal needle. 3.5 cc. of spinal fluid were withdrawn into a syringe, 250 mg. procaine dissolved in the fluid which was then reinjected, taking 15 seconds for the time of reinjection. The patient was then placed on his back with hips raised about six inches higher than the head. 0.5 cc. of a 1:1,000 solution of adrenalin was then given subcutaneously. In about ten minutes, anesthesia had reached the clavicles and was gradually moving upward. As the neck became anesthetic, the patient began to get drowsy, his eyelids drooped and respirations became a little more rapid, up to 30 a minute. In about 20 minutes from the time of injection the patient was evidently deeply unconscious and remained so for about one hour during which time a left-sided neck dissection was done, removing typical, tuberculous glands. During this time of "sleep", the patient's general condition seemed to be good. Corneal reflex was present, pupils were moderately small, equal and regular, respirations 25 to 30 a minute, regular, not so deep as they normally were and somewhat stertorous, pulse about 100, of good quality and regular. The patient made a good recovery from anesthesia and operation, without any complications or sequelae except a slight headache for a few hours. He was out of bed the next day. A month later, the operation was repeated on the other side of the neck using the same anesthetic agent with the same dosage and technique, with essentially the same results. The patient "slept" again for an hour. His recovery was again good and when seen two months after the second operation, he had gained some weight and his general condition seemed much improved.

This case merely gives another example of general spinal anesthesia without injury to the patient, and while spinal anesthesia has not yet reached the point where it can be used promiscuously to produce general anesthesia as the method of choice, this report does suggest that it may be used when deemed advisable for operations above the diaphragm.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 19221

TWELVE MONTHS' DIARRHEA WITH INTERMISSIONS

MEDICAL AND SURGICAL DEPARTMENTS

First admission. A married Scotchwoman thirty-five years old entered for the first time six months before her final admission. The chief complaint was intermittent diarrhea of twelve months' duration.

Following the birth of the last of her three children, two years previously, she became tired and run down. Two months later she began to have a sick feeling in the epigastrium and reduced her diet to soups and tea. She continued to have loss of sleep and appetite and to take a poor diet. A year after the onset her single daily bowel movements became watery. Four months later by advice given in the Outpatient Department she followed a low residue diet with bismuth with relief. Four months after this she began to have three watery stools a day. In the Gastro-intestinal Clinic she was found to be very nervous because of a sick baby, poor finances and fear of tuberculosis. After reassurance and a negative gastro-intestinal x-ray series, and after taking bismuth, cod liver oil and vitamin A capsules she made temporary improvement. Three months after the last visit, however, she returned nervous, weeping, and complaining of three loose stools daily, with some blood for the first time. She had lost 20 pounds in 16 months. Her weight on admission to the wards was 115 pounds.

The family history and past history are negative. She had financial worries.

She habitually drank much tea and ate few vegetables or fruits.

Physical examination showed a poorly nourished, apprehensive woman with exophthalmos and lid lag, especially on the left. The abdomen was slightly distended with gas in the large intestine. There was generalized tenderness. There was coarse tremor of the hands. The palms were cool. The shins showed pitting edema.

The urine was negative. The stool was blood streaked and showed a strongly positive guaiac, white and red blood cells. Blood examination showed 4,200,000 reds, hemoglobin 66 per cent (new Sahli), moderate achromia, slight variation in size and shape, rare polychromatophilia, 6,500 white cells, 65 per cent polymorphonuclears. The basal metabolic rate was +6. The serum protein was 6.8 per cent. Tuberculin 1:20,000 was positive.

X-ray examination of the chest and the upper gastro-intestinal tract was negative. A barium enema showed complete lack of haustral markings in the colon, which had leathery, constricted walls. Proctoscopic examination was inconclusive on the second and fourth days. At the end of eight weeks it showed the condition improved.

The patient was put on a high vitamin, low residue diet with cod liver oil and Harris yeast. Six carious teeth were extracted. At the end of nine weeks she was discharged much improved.

History of interval. She continued to make slow improvement for three months, at the end of two months having three to five movements a day with no blood for two weeks and weighing 137 pounds. At the end of three months she had four bloody stools in a day and began to have five to six watery stools again and to lose weight and strength. She passed no more blood. Then she began to have an almost constant watery rectal discharge and vomited about twelve times a day for the four days before her reëntry. She had worried about her inability to take care of her children, but less than before her first admission.

Second admission, four months after her previous discharge.

Examination showed a well nourished woman with excellent color in the cheeks and mucous membranes. The tongue was dry. All the teeth were absent. There was tenderness over the sigmoid and descending colon on deep palpation. The sigmoid was palpable "like rubber hose". The anus was sore; rectal examination was not done. The vaginal outlet was relaxed. There was leukorrhea. The pupils and reflexes were normal.

The amount of urine was normal when recorded. The specific gravity was 1.012 to 1.022 during the first two weeks, afterwards 1.002 to 1.014. Five out of eight specimens showed the slightest possible trace to a large trace of albumin. The sediment showed white blood cells at seven of eight examinations and red cells at six; it was loaded with whites at three and with reds once. (No catheter specimen.) Blood examination showed 5,710,000 reds at entrance, falling to 3,150,000 at the end of three months, later 4,780,000; hemoglobin 90 to 50 per cent Tallqvist; white cells 6,150 to 13,900, polynuclears 35 to 69 per cent. Before operation the stools showed gross blood once, occult at four of six examinations, much pus in two out of

seven specimens. The serum protein was 6.4 to 3.1 until ten days before death. A tuberculin test 1:1000 was positive.

Before operation the temperature was 97° to 101°, the pulse 76 to 120, the respiratory rate normal.

Proctoscopy showed a granular, stiff, indurated, narrowed rectal mucosa. There was definite progression towards a more chronic condition. The degree of narrowing was considered an unfavorable sign. Ulcers as such were not present. There were many pits and pocks.

The patient regained a pound or two of weight in the first three weeks. Then she lost five pounds in a week and had vomiting.

Five weeks after admission operation was done. The patient continued to run some temperature and developed sore throat and cough. X-ray of the chest on the 37th day after operation was inconclusive as to any change in the right infraclavicular region. The general condition was poor. She had marked anemia and a low serum protein, 4.3 to 3.3. Another chest film on the 60th day showed slight increase in the size of the lung lesion. Two transfusions were done with a gain of only 0.2 per cent in the serum protein after the first transfusion but a better gain in the blood picture. After a third transfusion the serum protein rose from 3.5 to 4.7.

On the 76th day after the first operation another was done. Two days later the patient was in good general condition considering the magnitude of the operation. Two days after this, however, her condition was very precarious, the pulse rapid and weak, the blood pressure not obtainable. After transfusion it rose to 90/70, but she continued in poor condition. Throughout the day the blood pressure varied from 65 to 80. That night she had an attack of cyanosis and complained of pain in the abdomen. The next morning she lapsed into stupor and died, 80 days after the first operation.

Clinical Discussion

Dr. Richard C. Cabot: I take it the essential question here is whether this is a purely local colitis or enteritis or whether it is the expression of some trouble altogether outside the bowel. I suppose it is much commoner to find a colitis, ulcerative or other, but we cannot decide that until we come nearer to the physical examination. There is nothing so far to call attention to any other part of the body except the bowel.

Ordinarily this is not the way we describe the tremor associated with hyperthyroidism. It is ordinarily a fine tremor. "The palms were cool" also is not characteristic of hyperthyroidism; they are usually warm and perspiring. The basal metabolism is within normal limits. The loss of weight might be due to hyperthyroidism but might also be due to the bowel trouble. So that we have very little except the eye symptoms, which are not enough in themselves to point to hyperthyroidism.

The stool showed pretty good evidence of ulceration in the bowel.

With the new Sahli I understand 66 per cent is about equivalent to 53 per cent by the old. In other words there is a slight secondary anemia and nothing else.

At her age a positive tuberculin test means very little. A negative test would have been of some importance, but a positive test at her age does not mean that there is active tuberculosis anywhere in the body.

The x-ray examination gives evidence of a chronic colitis and pericolitis.

We do not know what the proctoscopic examination showed before the eight weeks interval, so it does not help us much to know that it was improved at this time.

I take it the diagnosis made at the first admission was that of a chronic colitis, presumably an ulcerative colitis.

Dr. Leland S. McKittrick: At the first entry it was ulcerative colitis.

Dr. George W. Holmes: We have two sets of chest films, one taken during the first admission and the other eight or nine months later. All of the films show a definite process in the upper part of the chest, in the second interspace. The process is of a mottled character and has increased somewhat in size during the year.

Dr. Cabot: The statement here is "x-ray of the chest was negative".

Dr. Holmes: When we have a questionable case of colitis we sometimes x-ray the chest to determine whether or not tuberculosis is present.

This film taken at the first admission shows a definite process in the chest. Of course it is easier to see it now that we have the second set of films. Perhaps that is what allows me to do better than the man who interpreted it first. I should suppose such a process was most likely to be tuberculosis, especially since it has persisted for a long time.

There is a definite variation from the normal in the gastro-intestinal tract. The entire colon as shown here has the appearance of a rigid tube. There are none of the normal haustral formations present and there is no evidence of the ordinary type of peristalsis usually seen in the colon. It is definitely narrowed in its distal portion, perhaps in its proximal portion. There is no evidence of dilatation. We should expect to find a thickened colon with probably an ulcerated mucosa. Considerable barium has passed through into the small gut, and we have the ileum and probably part of the jejunum filled. I cannot make out the ileum close to the cecum, but the loops that are visible

are not abnormal. They show the usual marking and are not particularly dilated. This small film was probably taken to show the ileum close to the cecum, and there again I cannot be at all certain that there is anything unusual.

DR. CABOT: We have confirmation, then, of the ulcerative colitis, and the suggestion also of something in the chest.

At the second admission she was well nourished, which is important.

The specific gravity of the urine probably depended on the diet. A liquid diet would give a low gravity urine. There is no reason to suppose from that fact alone that there is anything abnormal. There was no catheter specimen, therefore we have no reason to pay any attention to any of these sediments. There is nothing significant in the blood. I do not know what the significance of the serum protein is in such cases as this.

DR. MAURICE FREMONT-SMITH: It was probably one of those dietary anemias due to poor diet or poor absorption of protein. The serum protein is supposed to be about 6 or 7; when we get down to 5 or 5½ we are very apt to have nutritional edema. If the patient is putting out a great deal of albumin in the urine we get it, and if he is starved we get it.

DR. CABOT: Apparently it grew worse towards the end. Probably she could not take a better diet.

Proctoscopy showed a more chronic condition as compared with what had been seen before. "There were many pits and pocks." I suppose that means healed ulcers; is that right, Dr. McKittrick?

DR. MCKITTRICK: I suppose that is what they mean; I am not sure.

DR. CABOT: We are coming to the operation and therefore should make as definite a diagnosis as we can before that. I should say that everything points one way, although Dr. Holmes has given us this hint about tuberculosis in the lungs. If it had not been for the x-ray I should not have thought of it. Aside from that everything points to a chronic colitis: thickening of the walls, ulceration,—apparently more thickening than ulceration. We keep hearing of stiffness and narrowing, things that we do not hear of very often with early ulcerative colitis. I have no doubt the operation done here was for better drainage of that colitis and giving the bowel a rest: operation at or near the cecum, to allow feces to go out there rather than to have them go through the natural passage. Was this your operation, Dr. McKittrick? Will you tell us about it?

DR. MCKITTRICK: Operation was done, as Dr. Cabot suggested, on a diagnosis of chronic ulcerative colitis, it being felt that amebic colitis, which is uncommon, was ruled out. Tuberculous colitis was also thought of, but there was no evidence on which to make such a diagnosis.

As to the serum protein, Dr. Chester Jones has pointed out to us that it may be of distinct surgical importance. These people, in addition to being unable to eat, lose a great deal of protein through the diarrhea, so that the edema becomes of surgical significance.

DR. CABOT: That is, it is a prognostic sign?

DR. MCKITTRICK: Yes.

DR. CABOT: It has nothing to say as to the nature of the disease?

DR. MCKITTRICK: No.

She was operated upon to give complete rest to the colon by bringing out a loop of the ileum near the cecum and completely diverting the fecal stream outside the abdomen. At operation the bowel was found very much as Dr. Cabot has suggested. The characteristic gross surgical finding at operation of an ulcerative colitis is a small, contracted, much thickened, more or less rigid colon, at times not much larger than my thumb, all the way round and sometimes including the cecum. The bowel is pale, almost white. The small superficial vessels are congested so that they stand out very distinctly, and along the mesentery of that bowel there is practically always a chain of small glands half a centimeter in diameter the pathologic report of which usually comes back to us as "chronic inflammation". That represents quite exactly the condition of this bowel as it was seen at this time, the process having been seen by proctoscopy to have involved the rectum, extended all the way around and included the cecum, as it usually does. In almost every case the entire bowel is involved.

DR. CABOT: May I ask you about this; is this true at all stages of the disease?

DR. MCKITTRICK: No; this is in the later stages of the disease. The earlier stages of course we do not ordinarily see because they respond quite well to the medical régime. In the earlier stages the bowel is not so contracted, not so thickened. I have seen cases in which the right half of the bowel is normal or merely a little pale, a little thickened, so that one may have difficulty in deciding whether or no there is much variation from the normal. This is quite a late stage as I have described it.

DR. CABOT: I suppose there is nothing especial to be said about your technic?

DR. MCKITTRICK: Our technic is in process of evolution. Our conception of the surgical treatment of this condition is changing somewhat and the technic of ileostomy is also changing a bit; we are not quite sure how it is best done. The principal thing is complete diversion of the fecal stream from the colon.

DR. CABOT: I remember when they used to take the appendix out and wash down through it.

DR. MCKITTRICK: Through and through irrigation in ulcerative colitis has been almost com-

pletely given up in this hospital. Ileostomy is now done for drainage and practically nothing else.

DR. CABOT: And it always is the ileum close to the cecum?

DR. MCKITTRICK: Yes, unless the process is localized to the sigmoid or rectum, when a proximal colostomy may be done.

DR. CABOT: Her cough, after the operation, is the first thing to make us think of the lungs. "X-ray of the chest was inconclusive as to any change in the right infraclavicular region." But you would not call it inconclusive, Dr. Holmes?

DR. HOLMES: I think there would be no doubt that there had been a change between the last film taken and the first one.

DR. CABOT: Can you tell us anything about the transfusion? Is there any gain in the serum protein?

DR. MCKITTRICK: Not much, but that is about the only way we have of introducing protein into the body if the patient cannot take it by mouth.

DR. CABOT: I have no guess as to what that second operation would be.

DR. MCKITTRICK: As a rule a patient after an ileostomy obtains tremendous relief. Many of them become essentially rehabilitated and practically normal in their living and general health. This patient improved temporarily, then reached a level where she stayed for a short time, then slowly got worse again. She had persistent temperature, vomiting and low serum protein. It was obvious to all of us that it was going to be a fatal termination unless something could be done to prevent the usual course of the disease. Within the few past years we have been removing the colon in a certain group of people who have had ileostomy but have not had a satisfactory result, where there is still sufficient evidence of the disease left in the way of absorption—attacks of fever or of bleeding—to make it necessary to do something else to keep them from being in the invalid class. The response of that group to removal of the colon has been most gratifying. Therefore the problem here was whether she was going downhill because of her colitis or because of her tuberculosis (we still felt, you see, that it was a straight ulcerative and not a tuberculous colitis) or because of both. It was agreed that her tuberculosis was not a great factor in her decline, and that the one thing to be done to help her was to remove the colon. Therefore the entire colon from the rectum through the base of the terminal ileum to the point which was brought out for ileostomy,—that was all removed. That was the operation at this time. The appearance of the colon as it was removed was quite in keeping with what was previously described,—a thin, rigid, white, contracted tube.

DR. CABOT: In the favorable cases where you have seen this done the patients get on well?

DR. MCKITTRICK: Very well. To me, and I presume to all of us who do not have the disease, the astonishing thing is how happy they are and how well they get along. The contents of the ileum become much more like the contents of the large bowel, the movements are much more formed, and the patients get on with extraordinary satisfaction. Of course it is all relative.

DR. CABOT: What does the rectum do?

DR. MCKITTRICK: The rectum will frequently have to come out as a third stage. A number have no trouble from it. Another group continues to have bleeding of sufficient severity so that it may have to be removed.

DR. CABOT: Have you seen the bowel in operations in tuberculous enteritis or tuberculous colitis, so that you would have any idea whether it would look like this?

DR. MCKITTRICK: We have all seen the bowel at operation more in relation to localized areas of tuberculosis. I have not seen enough tuberculous colitis (if there is such a thing as a diffuse process involving the entire bowel) to be any judge. It is my impression that in most tuberculous large bowel lesions there would be a more localized process than there is in this lesion.

DR. CABOT: Is there a diffuse tuberculous colitis?

DR. TRACY B. MALLORY: I do not think I have ever seen it either. Tuberculous enteritis, as Dr. McKittrick says, is usually a localized process or a series of localized processes. There may be two or three areas of involvement with areas of normal intestine in between.

DR. CABOT: It is just as likely to be in the small as in the large intestine?

DR. MALLORY: One often sees small intestine lesions as a terminal event in what is primarily pulmonary tuberculosis; but I think a tuberculous enteritis in which the enteritis is the main symptom is more apt to be in the large intestine than in the small. Somewhat the same localization is also true of amebic colitis, which is the other thing one has to consider seriously in the differential diagnosis. It is very much more apt to be in the cecum than anywhere else. Both tuberculous and amebic lesions become less and less frequent as we come towards the rectum, whereas chronic ulcerative colitis becomes less and less marked as we pass backward towards the cecum. The involvement is in the reverse order in the two conditions.

A STUDENT: Do you get exacerbations in tuberculous enteritis?

DR. MALLORY: I believe you can, although I do not know much about it.

DR. CABOT: You certainly do in amebic colitis, in the cases I have seen.

The second operation then, as Dr. McKittrick explained, is for the removal of the whole colon, leaving the rectum in.

I have no particular idea as to the immediate cause of death. I suppose it can be a general peritonitis. I do not see any reason to suppose it is hemorrhage. I do not feel any confidence as to the cause or whether any precise cause will be found. A great many patients who have been sick as long, have suffered as much, have got as much run down will die and post mortem no particular reason why they should die just then is found. If there is any particular reason my guess would be that it is peritonitis.

I am following Dr. Holmes on these films, and therefore on these films and his authority I am going to say there is a tuberculous process at the right apex. You understand that no stethoscopic changes have ever been found, and no bacilli. It is purely an x-ray diagnosis. There is nothing to draw our attention to the heart or to the kidneys or to any other part of the gastrointestinal tract except the bowel; so that I do not see why we should say anything except the diagnosis of ulcerative colitis which I take it will be given us on the examination of this colon when it was taken out ante mortem and whatever there is in the lung, presumably tuberculosis at the right apex.

A STUDENT: You don't suppose, with the cyanosis and pain, that could have been an embolus, probably in the abdomen?

DR. CABOT: No, I do not. There is little to suggest it. Cyanosis is the only thing. Pain in the abdomen does not suggest anything to me.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Ulcerative colitis.

DR. RICHARD C. CABOT'S DIAGNOSES

Chronic ulcerative colitis with thickening.
Tuberculosis at the right pulmonary apex.

ANATOMIC DIAGNOSES

1. *Primary disease.*

(Chronic ulcerative colitis.)

2. *Secondary or terminal lesions.*

Operative wounds, ileostomy and colectomy.
Obstruction of the small intestine.
Acute enteritis, proximal jejunal.
Tuberculosis of the apex of the right lung.
Pulmonary edema and congestion.
Fatty changes in the liver.
Tabes mesenterica.

3. *Historic landmarks.*

Chronic fibrous pleuritis.

PATHOLOGICAL DISCUSSION

DR. MALLORY: The large bowel in this case showed a typical chronic ulcerative colitis. It had of course been entirely removed surgically before the time of autopsy, so we had no further evidence of it. Sometimes the process extends into the ileum. I have seen it go up twenty to thirty centimeters into the ileum in an occasional case; usually it stops fairly short at the ileocecal valve. There was quite extensive pulmonary tuberculosis in the right upper lobe, with a great many small solid tubercles.

DR. CABOT: About how far down did it go?

DR. MALLORY: At least seven centimeters down from the apex. There were no definite cavities, and we found no adequate cause for the exitus. There was some suggestion of intestinal obstruction. Apparently a terminal loop of ileum had slipped over into the right gutter of the region from which the cecum had been removed, and appeared to be slightly though not very firmly twisted upon itself. The gut above that point was widely dilated, below it relatively collapsed, though it still measured five centimeters in diameter. It was far from being a complete intestinal obstruction, though functionally there probably was obstruction. There was no terminal pneumonia and there were no positive blood cultures. I think one can probably only say that the severity of the operation was too great for a woman who was in a relatively feeble state from her very prolonged disease.

DR. MCKITTRICK: I think that quite answers it, Dr. Mallory. Possibly the mild degree of intestinal obstruction that she had was enough to topple her over. She manifestly had more disease and more operation than she could quite handle.

DR. CABOT: What is your idea of the nature of this disease that we call ulcerative colitis? Do you think it is a local disease or an infection? Do you think it is a local disease or a manifestation of disease somewhere else in the body?

DR. MALLORY: I really have no idea.

DR. CABOT: Do you believe in Bargen's bacillus?

DR. MALLORY: I am very doubtful about it, though I do not know how to disprove it either.

DR. CABOT: Do you feel that there is any relation between this disease and what is called mucous colitis?

DR. MCKITTRICK: I have not felt that there was. Mucous colitis has always impressed me as a functional disease without any organic pathology whatever.

DR. MALLORY: I think there is such a disease. I had a chance to do an autopsy on one case in which every intestinal cell was pouring out enormous amounts of mucus and the intestine was filled with ropes of mucus. Of course that condition could very easily be explained as a functional abnormality. I think in many cases there is a definite psychic element, but I think there is such a local condition and we can see the results of it in the intestine, although the pathologist rarely has a chance to see it.

DR. MCKITTRICK: These cases come on so acutely at times, so completely unrelated to any previous bowel trouble, just like a pneumonia or any other type of acute illness, that I have never associated them with any previous so-called mucous colitis. Most of the cases of so-called mucous colitis had nothing to show at proctoscopy.

DR. CABOT: What is your opinion?

DR. MCKITTRICK: I do not know whether it is a deficiency disease or an infection. It is easy for an infection to be a secondary invader. If I were to hazard a guess I should lean more towards some type of deficiency disease than towards primary infection.

CASE 19222

AN UNUSUAL CAUSE OF EPIGASTRIC PAIN

SURGICAL DEPARTMENT

An unmarried Irish housemaid fifty-three years old entered complaining of intermittent pain in the epigastrium and the left upper quadrant of seven months' duration.

Five years before entry for six weeks she had epigastric pain coming on about an hour after meals and relieved by soda and a special diet. She vomited several times. She was then well until a year before entry, when for two weeks she had pain below the left shoulder blade, diagnosed as pleurisy. Since that time her strength had been failing. Six months before entry she began to have fairly continuous epigastric pain with sharp attacks not related to meals, radiating under the left costal margin to the back, somewhat relieved by soda. For five months she had by medical advice followed a bland and liquid diet without relief. She vomited three or four times a month. She had been afraid to eat, and was not hungry. She had lost twenty pounds in the past year. She had never passed blood.

The family history is not significant, or the past history except for a left inguinal herniotomy eight years before admission.

Physical examination showed a rather poorly nourished woman in no apparent discomfort. The heart and lungs were normal. The radial arteries were palpable. The blood pressure was 150/90 to 130/85. There was marked tenderness in the midepigastrium, with slight spasm. The aorta was easily felt. No masses were made out. Rectal and pelvic examinations were negative. The right pupil was larger than the left and showed arcus senilis. Both reacted normally. The fundi showed moderate arteriosclerosis. The reflexes were normal.

The urine was not remarkable. Blood examination showed 7,600 white cells, 83 to 85 per cent polynuclears, hemoglobin 60 to 65 per cent, reds 4,050,000 to 4,490,000. Two smears showed marked to moderate achromia, slight variation in size. One of three stool examinations showed a slightly positive guaiac.

Before operation the chart was normal.

X-ray examination showed a large filling defect involving approximately half of the greater curvature of the stomach just above the incisura. In the midportion of the defect there was a punched-out irregularity.

On the eighth day operation was done. The patient made a good recovery from anesthesia and had a fairly satisfactory convalescence, though she had little appetite and saccharated ferrous carbonate had to be stopped because of vomiting. She developed a sore throat with a fever of 102°. There was oozing from the wound; cultures showed diphtheroids, staphylococcus aureus and a few non-hemolytic streptococci. In four days this subsided. Thirty-five days after operation she was discharged relieved.

CLINICAL DISCUSSION

DR. MAURICE FREMONT-SMITH: This is a story that is more consistent with duodenal ulcer than with anything else. She had a period of remission; she had some soda relief, at first anyway. Her loss of weight is consistent with her fear of eating. She is fifty-three years of age however, and at that age we always think of neoplasm. On the other hand the history is of five years' duration. That is a long history for a neoplasm of the stomach.

I suppose both pupils showed arcus senilis.

MISS PAINTER: The arcus senilis was on the right only.

DR. FREMONT-SMITH: There is nothing in the physical examination that helps us. The inequality of the pupils is probably not significant, or at least we do not know the explanation for it.

There is a slight secondary anemia which might be nutritional. This examination shows nothing very definite.

I will make the diagnosis of ulcer as against carcinoma on the basis of the length of the history, the negative guaiacs which we had, which I think are more important than the one positive, on the basis of the early soda relief. We will see what the x-ray shows. The x-ray of course was taken before the operation.

DR. GEORGE W. HOLMES: The x-ray chest examination was essentially negative. We have a series of three films of the stomach. The statement in the report probably means this area on the greater curvature, and if that observation is correct it undoubtedly means cancer. From the films, however, I would not say there was anything wrong. There might be an ulcer there; there might not.

DR. FREMONT-SMITH: It might be spasm?

DR. HOLMES: Or even pressure from the colon.

DR. FREMONT-SMITH: The colon, up there?

DR. HOLMES: Yes. But of course the physician who made the examination had an opportunity to turn the patient in different positions, to palpate that area and find out whether it was constant, and his observation ought to be better than mine. The duodenal bulb is fairly well shown in these films and does not show any gross deformity.

DR. FREMONT-SMITH: I think it is fair to say, now that we know this, that ulcer does not usually come on at the age of fifty-three or forty-eight. The onset is usually in the twenties or early thirties. On the other hand, five years. I think we all have to learn over and over again the length of time that we can have malignancy without severe symptoms if it happens to be in a "silent area". If that had been nearer the pylorus we should have had pyloric obstruction long before. In view of the x-ray films I think there is no other diagnosis to make than cancer of the stomach.

PREOPERATIVE DIAGNOSIS

Presumably very extensive inoperable carcinoma of the stomach.

OPERATION

On exposing the stomach there were seen in about its middle portion, present on the anterior wall, one large and one small elevated plaque, slightly whitish in color and extending above the rest of the serous coating of the stomach. The texture was firm but not unusually hard. There was enlargement of the lymph nodes along the lesser curvature, particularly in the region of the gastric artery.

A specimen was taken from the external aspect of the tumor without opening the stomach and given to the pathologists for examination by frozen section. Three reports were returned by three pathologists who examined the specimen: (1) Carcinoma. (2) Lymphoblastoma. (3) Leiomyosarcoma. With this conflicting evidence, and with the operator's feeling that we were dealing with a circumscribed lymphoma of the stomach, a gastric resection was done with a good margin above the upper limit of the growth. The continuity of the intestines was reëstablished by a Polya type of anastomosis, bringing the jejunum posterior to the transverse colon.

PATHOLOGIC REPORT

Lymphoblastoma (lymphosarcoma type).
Hyperplasia of lymph nodes.

FURTHER DISCUSSION

DR. FREMONT-SMITH: I think we are excused for not making the diagnosis before operation.

ADDITIONAL HISTORY

On the twenty-eighth day after operation x-ray treatment was started, and was given for four days. The patient had much nausea.

On pelvic examination at discharge at least five hard, firm, freely movable masses were felt in the posterior culdesac, believed to be lymphomatous metastases.

FURTHER DISCUSSION

DR. FREMONT-SMITH: They gave x-ray treatment on the assumption that it was a lymphoma. Isn't it much more characteristic of a carcinoma to drop down there and imbed itself?

DR. TRACY B. MALLORY: Yes, a great deal.

PATHOLOGIC DISCUSSION

DR. FREMONT-SMITH: Which one of those three diagnoses did you give on frozen section?

DR. MALLORY: I cannot seem to remember. I think I said lymphoma, but I would not want to swear to it. There is a group of these tumors of the stomach which histologically are made up of masses of very small and extremely undifferentiated cells which tend to be quite round. We used to be content to diagnose these as "small round-cell sarcoma". I think it might be a good idea if we stopped there now, but we try to be a little more definite if we can. Some of these tumors certainly—perhaps the majority—are lymphomatous. They do not behave quite like lymphomas in other parts of the body. Another strange thing about it is that rather regularly when we have a fair sized tumor in the stomach the regional lymph nodes will not show any lymphoma at all. That is the case here. There are also several cases reported in the literature with very long cures following resection, which is something we do not expect to get in lymphoma elsewhere in the body. I think it is fairly probable, however, that a number of the tumors of this type, I think probably lymphomas, have actually been cured by resection. There is no possibility of cure in any other way. So that if you happen to operate on these cases the logical thing is to do a resection. I think probably Dr. Holmes will have some views about treating these cases.

DR. HOLMES: As to the lymphomas, I think that Dr. Mallory's statement is correct that they should be removed and the operation followed by radiation treatment. There is considerable risk in radiating a hollow viscus of that type, because you may get a rapid destruction of the tumor with perforation and peritonitis. Such an accident has happened in the past. So that we feel much safer in radiating after the tumor has been removed. I have seen at least one case where the cecum was removed, and the patient is now living after more than ten years.

I would like to add too, in regard to the diagnosis, that there is no way, so far as I know, of differentiating lymphoma of the stomach and

other malignant tumors unless there are other parts of the gastro-intestinal tract involved. About fifty per cent of malignant tumors have lesions in other parts, frequently in the duodenum and upper jejunum, and where we get a multiple lesion it is a little more likely to be a lymphoma than a carcinoma.

DR. FREMONT-SMITH: If she had had that five years before and if that had been a carcinoma, do you think she could have gone five years as well as she was?

DR. HOLMES: I do not know. I do not think we know how long the pre-symptom stage of carcinomas is. I am pretty sure it sometimes is as long as that.

DR. FREMONT-SMITH: She had epigastric pain five years before she came in.

DR. MALLORY: I do not believe she had lymphoma five years ago. I feel certain of that.

DR. HOLMES: Of course we see carcinoma developing in ulcer, and I have seen a number of cases with a long history of gastric trouble that at operation had carcinoma, but I presume that they had ulcer in the early stages. In looking up these cases of prepyloric ulcer we found that one gave a history of twenty-five years and others of ten to twelve years, and yet at operation all had cancer.

DIAGNOSIS

Lymphoblastoma of the stomach, lymphosarcoma type.

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SHOULD THE WHITE HEALTH UNITS BE SCRAPPED?

WE have at hand an official copy of a recent memorandum by the Finance Commission of Boston recommending a curtailment of 10 per cent, or $75,000, in the expenditures of the Boston Health Department. The Commission regards this as a necessary economy dictated by the existing financial stringency.

As to the necessity for further curtailment of municipal expenditures in Boston, we are not in doubt and, moreover, we are inclined to believe that considerable economies can be made in Health Department expenditure by departmental reorganization without material sacrifice of essential functions.

On the other hand, the recommendations of the Finance Commission go further. Their memorandum points out that the George Robert White Health Units have been but recently established and they propose radical curtailment of Health Unit activities on the ground that they are new and non-essential.

Of the Health Units the memorandum says: "Valuable as they may be, the City could continue to function without the White Health Units, without the dental work, without the tubercular clinics, without the baby clinics and without any of the lesser functions of the Health Department. They represent services to the citizens of Boston; not essential services of the City as a governmental unit."

But, we submit that the City could function "as a governmental unit" with but one school, no traffic control, and one central fire station; and that the schools, fire protection, and traffic control represent *services to the citizens of Boston, not essential services of the City as a governmental unit.* The Health Department does not exist to help the government to govern. It exists to serve the citizens.

We believe that, in making *specific recommendations for curtailment* in the Health Department, the Finance Commission has gone beyond its depth. If it be logical to economize by scrapping improved service and, if any of the White Health Units are to be closed on this ground, the same argument is valid for the newer schools, the high-pressure water system of the Fire Department and most of the traffic control by the police.

On the other hand, we believe that, if the Finance Commission would obtain expert and disinterested advice on the problem of reducing expenditure in the Health Department, it would be found possible to make the required saving of expenditure by reorganization within the Health Department without sacrificing the more valuable health conserving activities of the Health Units and without serious loss of efficiency anywhere in the Department.

Expert and disinterested advice on these matters can be obtained at small cost and with little loss of time from the American Public Health Association and we hope that the Finance Commission will obtain such advice there or elsewhere. Responsibility for wise curtailment will then rest squarely upon the shoulders of the Mayor and of the Health Commissioner.

We are in hearty accord with the views expressed regarding these matters in a statement, published below, which the Executive Committee of the Boston Health League sent recently to the Chairman of the Finance Commission, and we commend it to the consideration of all who are interested in the fundamental welfare of the citizens of Boston.

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STATEMENT UNANIMOUSLY AUTHORIZED BY THE EXECUTIVE COMMITTEE OF THE BOSTON HEALTH LEAGUE AT ITS MEETING ON APRIL 27, 1933

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Units, and feeling that the importance of these Health Units and of some of their essential services has been challenged by the recent Report of the Finance Commission, the Boston Health League believes that it should offer to put at the disposal of the Finance Commission all of its information and data which bear upon the subject, and that it should also make its own position clear.

Since the Boston Health League was organized in 1920, it has striven to promote coördination and coöperation between the public and private agencies which are working for the improvement of health in Boston. Almost from the time when the original Health Unit was organized in the West End in 1916, the Health League has studied the programs of these Units at every stage of their development and has championed their cause.

We believe that two principles of the greatest value are embodied in these Health Units. These Principles are: (1) to make municipal Health Services increasingly available to the people through the establishment of district centres in carefully selected neighborhoods; and (2) to promote coördination of programs and coöperation between the Health Department and the whole series of private agencies which supplement its work. These advances have been realized through the Health Units and have called forth the admiration of health experts from many parts of our own country and even from abroad.

Moreover, the campaigns in preventive medicine which the Health Department carries forward through the medium of the Health Units embrace three important features which the Health League has sponsored from their inception. These features are as follows:

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(2) The *decentralization of preventive tuberculosis activities* including early diagnosis and examination of contacts. The establishment of this work in the Health Units marked another great advance in the struggle against this disease. The reduction and control of tuberculosis is dependent on the early detection of the active case and the rounding up and examination of all possible contacts. This has been made possible in increasing measure because of the convenience of location and diagnostic facilities in the Health Units.

(3) A third service of outstanding merit from the point of view of organization, is the *preventive dentistry* provided for young children at the Health Units. The value of this kind of service as a means of improving the health of the community is so generally recognized by health experts that the League endorses it without question.

CONCLUSIONS

(1) Because of the existing financial situation in Boston, as elsewhere, the Health League does not question the wisdom of the Finance Commission in suggesting the possibility of a saving of 10 per cent, or $75,000, in the budget of the Health Department as a whole. The League has been informed that, already, important economies have been planned for the Health Department, and it is willing to believe that savings can be made by reorganization of some of the branches of the Health Department without sacrificing either efficiency or essential services.

(2) It would not seem unreasonable to suggest that the expert advice and opinion of the American Public Health Association might be obtained as to the value and content of the program of the Boston Health Department and as to the direction and trend of possible economies that might be instituted.

(3) We believe that the Health Units and their major services in child welfare, tuberculosis diagnosis and control, and dentistry are being conducted economically and represent essential services.

It is important to call attention to the fact that money wisely expended for a program for the prevention of disease results in a substantial saving in money which would otherwise be required for the treatment of disease.

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intendent, Westfield State Sanatorium, Westfield, Mass. Now, Tuberculosis Controller, Department of Health, Detroit, Michigan. President, Michigan Tuberculosis Association. His subject is "Early Detection of Pulmonary Tuberculosis." Page 1143. Address: Herman Kiefer Hospital, Detroit, Michigan.

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SPINK, WESLEY W. A.B., M.D. Harvard University Medical School 1932. House Officer, Fourth Medical Service, Boston City Hospital. Address: Boston City Hospital, Boston. Their subject is "Methylene Blue in the Treatment of Poisonings Associated with Methemoglobinemia." Page 1152.

NELSON, N. A. B.S., M.D. Long Island College Hospital, Brooklyn, New York 1926. Assistant Director, Division of Communicable Diseases, Massachusetts Department of Public Health. Assistant Physician, Department of Dermatology and Syphilology and Junior Assistant Surgeon, Department of Gynecology, Boston Dispensary. Acting Assistant Surgeon, United States Public Health Service. Assistant in Dermatology, Tufts College Medical School. His subject is "The Follow-Up of Gonorrhea and Syphilis in Private Practice." Page 1153. Address: 546 State House, Boston.

TENNEY, BENJAMIN JR. B.S., M.D. Harvard University Medical School 1925. Junior Visiting Surgeon in Obstetrics and Gynecology, Boston City Hospital. Assistant Obstetrician, Massachusetts General Hospital and Cambridge Hospital. Address: 271 Beacon Street, Boston. Associated with him is

KING, RICHARD B. A.B., M.D. Harvard University Medical School 1925. Instructor in Medicine, Harvard Medical School. Assistant in Medicine, Massachusetts General Hospital. Address: 311 Beacon Street, Boston. Their subject is "Pregnancy Coincident with Cirrhosis of the Liver." Page 1157.

LEAVITT, PEIRCE H. S.B., M.D. Harvard University Medical School 1914. F.A.C.S. Surgeon, Goddard Hospital, Brockton. His subject is "Tetanus with an Unusual Early Symptom." Page 1160. Address: Brockton, Massachusetts.

SAUNDERS, GEORGE M. M.D. Harvard University Medical School 1925. Associate Clinical Director, Yaws Commission, Kingston, Jamaica, and Rockefeller Foundation, International Health Division. His subject is "General Spinal Anesthesia: Report of a Case." Page 1161. Address: 46 Duke Street, Kingston, Jamaica.

BOSTON MEDICAL LIBRARY

EXPERIENCES, which have been common enough in the times through which we are passing, must have impressed those who have to do with the conduct of endowed public institutions with the desirability of, in some way, securing greater fluidity to the funds upon which depend the conduct of the service rendered by the institution. Though it is supposed to be highly improper to "look a gift-horse in the mouth", nevertheless, it should be brought to the attention of all charitably disposed individuals that they take the trouble to ascertain in what way restrictions they may feel they would like to impose upon the expenditure of moneys which they contemplate giving would be likely to affect the conduct of the affairs of the beneficiary. Time is sure to change many of the problems an institution has to face and unless some latitude is given to the administrators which will make possible the best utilization of the money bequeathed, the good that might be done is likely to be curtailed. St. John's Church in Portsmouth had a fund of $6000, left it many years ago for the purchase of cord wood to burn in heating the edifice, *and for no other purpose.* The vestry never felt they could sacrifice that income and yet they must burn fuel in old-fashioned hot-air stoves. Andover Theological Seminary was the beneficiary from a number of small endowment funds designed to pay the personal expenses of indigent students, in the olden times, for various services such as laundry, etc. It required court action to translate the benevolent intentions of the donors into a service that would still be carrying on, in spirit, the original beneficent purpose.

The ways in which a medical library can be of the greatest benefit to the public it serves are quite different in many respects from what they used to be. The way in which the collections of books are used by doctors is unlike what it was twenty-five years, or even ten years, ago. The time of a busy doctor is taken up in ways not dreamed of in those periods. A good deal of the detail he used to do personally now has to be done for him, which means expert library service, and this costs money. The handling of accumulations of new books and pamphlets, increasing at an annual rate wholly unthought of a quarter of a century

ago, adds materially to the general expense of conducting a library. Therefore, it requires a far more liberal endowment to provide for such added expense. Failure to carry special journals brands the institution as unprogressive. These must be added to the subscription list and there is nothing that eats up money faster than the attempt to keep pace with this ever-growing demand.

The cost of completion of files of journals and bindery expenses incidental to the keeping of books in condition call for frequent augmentation of funds, for, as the volume of accessions increases, such costs necessarily mount in proportion.

For certain purposes this Library has funds adequate to meet present-day demands upon its endowments but for many these are wholly inadequate. It has been through the kindly offices of physicians, oftentimes, that bequests have been secured for endowment and it is hoped that, in the future when opportunity offers to secure additional bequests, the physicians who act as the promoters may make it clear to the prospective donors that their gifts will be made much more effective if not too uncompromisingly devoted to one purpose, to the exclusion of all others. Such funds as those applied to subscriptions to periodical literature should be substantially increased; so also the bindery fund and the fund for general administrative purposes.

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

The Truth About Bright's Disease*

BY JAMES P. O'HARE, M.D.

The purpose of this brief and necessarily sketchy talk is to try to dispel the misunderstandings and fears of the laity concerning Bright's disease. This disease, named after Richard Bright, is essentially a disturbance of kidney function which is to excrete waste products and to help maintain the chemical balance of the body. The mechanism by which this is accomplished is five million microscopic filtration units. In health these work with greater efficiency than any of the dynamos of an electric light and power plant. Like the latter the kidneys have a tremendous reserve indicated by the fact that many of the filtration units may be idling, some working at only part capacity, others at full speed. But all are ready at a moment's notice for the "peak load".

Few of you realize the enormous quantities of blood that pass daily through the kidneys to be freed from waste products. Actually 10 to 15 times your body weight must be exposed to these filters each 24 hours of the day.

Bright's disease or nephritis destroys the efficiency of this beautiful mechanism by damaging or destroying these filtration units.

For the sake of simplicity I am going to divide all the various types of nephritis into acute and chronic.

ACUTE BRIGHT'S DISEASE

Acute nephritis is an inflammatory disease occurring chiefly in children and young adults. Its cause is usually an infection, often a mild one, in the throat or upper respiratory passages. Tonsillitis and scarlet fever are among the commonest causes.

The nephritis begins when the infection is at an end or on the wane, 10 to 14 days from the onset of the infection. At this time you may notice an unusual pallor and perhaps puffiness of the face or feet. Examination of the urine by the doctor discloses albumin and other evidences of kidney damage. The result of such damage is retention of water and waste products in the tissues. These explain the swellings and the symptoms of poisoning.

Most patients, especially children, recover completely in a few weeks. A rare patient has such a severe process that the kidneys shut down completely and death occurs quickly. A few only pass on into chronic nephritis. This unfortunate result may arise from any of the three following causes:

(1) The acute stage may be so mild that it is never recognized and treated.
(2) Treatment may be poor or poorly followed.
(3) The disease may become chronic in spite of the best of treatment.

The most important part of the care of these patients is bed rest. This should be maintained absolutely and if necessary for months, until the physician is thoroughly satisfied that all signs of inflammation have ceased. This is not easy because the patient soon has no symptoms, feels quite well, and can't understand the need of staying in bed. It is, however, vitally important because getting up too soon may cause him to lose his only chance to be cured.

Diet is next in importance. This should be arranged by the physician not merely to spare the kidneys but with due regard to the needs of the rest of the body. Our diets, after the first few days, are much more liberal than they were ten years ago.

Drug treatment is only of value in the relief of particular symptoms and signs.

All infectious foci should be removed and all new infections avoided. These tend to keep up the disease and often activate it.

*Station WBZ, April 11, 1933, 4:30 P.M.

CHRONIC NEPHRITIS

In patients under 35 this disease is usually the result of an acute nephritis. Beyond 35 its origin is entirely different, the result of high blood pressure and generalized arteriosclerosis. Both types are very similar and eventually reach the same end point.

In the first type the acute inflammation in the kidneys continues and progressive destruction follows. These organs are no longer able to function properly and waste products accumulate in the tissues producing symptoms of poisoning. At the same time the blood pressure rises and changes take place in the arteries, heart, brain, eyes, bone marrow, etc. Death is the final result.

In some patients chronic nephritis is of short duration lasting not more than two or three years. Many, however, with good care and treatment live comfortably and well for many years. I am still following some of my patients whose original disease began 15 or more years ago. I have heard of one man, still alive, who was diagnosed as having "Chronic Bright's" 27 years ago. So, although the disease may well be a serious one there is no need for pessimism. Many a patient has lived to bury the doctor who predicted too pessimistic an outlook for him.

In the second type of chronic nephritis occurring in older individuals the disease is not primarily in the kidneys at all but in the small arteries all over the body. As a result of this sclerosis of arteries there is a gradual diminution of the blood supply to various organs including the kidneys. Degeneration of these organs necessarily follows. High blood pressure is associated with this parent disease which is called vascular hypertension.

In the past, many patients have been diagnosed as having chronic nephritis who in reality had little or no secondary degeneration of the kidneys. Many of the symptoms attributed to chronic Bright's disease should more accurately be attributed to the parallel disorders in the brain or heart.

Vascular hypertension most often is an inherited weakness of blood vessels aggravated by abuse of the circulation by too intense mental and perhaps physical strain. Without doubt, overeating also plays a part. High blood pressure and hardening of small arteries may be noted at 35 or 40 years. If the arterial disease advances more rapidly in the brain, apoplexy is probable. If the circulation through the heart is affected, heart disease is the result. If the disease becomes marked in the kidneys, chronic nephritis follows. Diabetes is another branch from the same tree. Frequently the patient shows signs of several of these secondary disorders. More patients die from heart disease or shock than from insufficient kidneys. All of these disorders should be grouped together as parts of one generalized circulatory disease, vascular hypertension.

How important this disease is, is indicated by the fact that practically one person in every four over 50 years dies from some of its forms. Furthermore, our strenuous way of living with its mental strain and worries seems to be advancing the age incidence into the early thirties, occasionally into the twenties. Unless we learn to live more calmly, our span of life, recently increased by the control of the infectious diseases, will again decrease through quick wearing out of our circulatory machinery.

The duration of these various circulatory disorders is extremely variable. In a few patients the disease advances with great rapidity and "finis" is written in three to four years. In most, however, progress is quite slow and 15 to 20 years is not rare. When chronic nephritis occurs, it is late and frequently not so serious as the other disturbances of the heart, brain, etc.

No discussion of the treatment of heart disease, hypertension, diabetes, etc., is possible here. In a general way it can be said that anything that will make us live more sanely and worry less will decrease the incidence and slow down the progress of all these diseases.

Again, I am sure that if every adult, 35 years or over, would voluntarily or by compulsion have a physical examination each year we doctors would pick up these diseases in the early stages while cure is possible or treatment much more effective. It is truly pitiful at times to have a patient present himself late in the disease looking for help, when your examination discloses the architecture of his circulation largely destroyed. A routine examination a few years before might have disclosed the structural weaknesses which at that time might have been strengthened and protected.

The first step in the treatment of chronic nephritis should be a careful examination to estimate the degree of damage not in the kidneys alone but in the heart, brain, blood vessels, etc. If the disease is not too far advanced, much can be done in the way of supporting the circulation, decreasing strains, etc., by rest, exercise, diet and drugs.

The treatment of the kidneys is largely dietetic, striving to balance the intake of certain foods with the body needs and the decreased ability of the kidneys to handle the waste products. Chemical blood and urine tests are now available to help us estimate the degree of kidney dysfunction and the success of our dietetic efforts.

Drugs while necessary in the treatment of other parts of the circulation are, for the most part, harmful to the sick kidney.

Infections should, of course, be cleared up and new infections avoided.

CONCLUSIONS

Acute nephritis is an important disease only in that it may become chronic. Chronic nephritis, though a serious disease, can be, with good care, compatible with comfort for many years.

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending May 6, indicate a mortality rate of 11.1 as against a rate of 11.8 for the corresponding week of last year. The highest rate (18.1) appears for Fall River, Mass., and the lowest (4.4) for Flint, Mich. The highest infant mortality rate (18.3) appears for Somerville, Mass., and the lowest for Des Moines, Ia., Duluth, Minn., Lowell, Mass., South Bend, Ind., Spokane, Wash., and Waterbury, Conn., which reported no infant mortality.

The annual rate for 85 cities is 12.0 for the eighteen weeks of 1933, as against a rate of 12.5 for the corresponding period of the previous year. —*Bureau of the Census.*

AMERICAN PUBLIC HEALTH ASSOCIATION SIXTY-SECOND ANNUAL MEETING, INDIANAPOLIS, OCTOBER 9-12

A glance through the preliminary program for the scientific sessions of the Sixty-Second Annual Meeting of the American Public Health Association illustrates again that there is no diminution of study and research in times of depression, nor any reduction in the quality or quantity of scientific writing.

The program follows the traditional pattern of breakfast, morning, luncheon, dinner, afternoon and evening meetings, beginning Monday morning, October 9 and continuing through Thursday, October 12.

The successful Health Education Institute held last year for the first time will be repeated this year, the theme of the five sessions being "The Psychology of Health Education."

Encouraged by the interest displayed in the Health Education Institute, the Program Committee approved a request from the Vital Statistics Section to arrange a similar brief seminar at Indianapolis. The program of the latter is so constructed as to concern health officers and registrars alike. Both Institutes will be held on Saturday and Sunday, October 7 and 8, with a final period on Monday morning.

The presence of a number of related associations and groups adds interest to the program. They include the American Association of School Physicians, the Conference of State Sanitary Engineers, the Conference of State Laboratory Directors, the Association of Women in Public Health, the American Social Hygiene Association, the International Association of Medical Health Officers. The International Association of Dairy and Milk Inspectors will attend the Laboratory session on Thursday morning, participate in a joint meeting with the Food and Nutrition Section on Thursday afternoon, and begin their own independent meetings on Friday. The Indiana State Nurses Association and the Indiana League of Nursing Education will meet with the Public Health Nursing Section on Thursday afternoon and continue with their individual sessions on Friday. The American Social Hygiene Association is building a joint program with the Child Hygiene Section for Thursday morning and will conduct a Regional Conference for a day and a half thereafter.

The ten sections of the American Public Health Association have already prepared material for 42 sessions, and the end is not yet in sight. The keynote of the meeting appears to be one of intense practicality. The titles of the papers and reports indicate the thinking that health workers these days must necessarily do.

Further details on the scientific program can be obtained from the American Public Health Association, 450 Seventh Avenue, New York, N. Y.

THE PRICE OF THE PHYSICIAN'S HANDBOOK

Reference was made in the issue of May 18, 1933 to the production of the Physician's Handbook of Community Resources in Metropolitan Boston together with Certain Legal Responsibilities.

The expense of collecting these facts and printing the book has been considerable. This necessitates a charge of fifty cents for each copy. This publication will require additions and revisions from time to time in order to keep the material up-to-date. This will also cost money which will be met by revenue from sales. This brochure should be on the desk of practitioners in and around Boston. One can hardly afford to be without it. The Massachusetts General Hospital has copies for sale.

TUBERCULOSIS ABSTRACTS

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

JUNE, 1933

TUBERCULOSIS IN THE NEGRO

Pinner and Kasper compared and reported the postmortem findings in 303 Negro and 219 white patients dead of tuberculosis. The study not only points out certain significant differences between the two races, but also throws light on the pathogenesis of tuberculosis in general. An abstract of the article follows:

The authors were impressed by apparently significant differences between colored and white patients dead of tuberculosis and decided to replace their impressions by carefully collected data. It has been shown that the most significant factor in the development of tuberculosis is the propagation of lesions within the body, and that one of the most important and probably the only definitely established fact about immunity is the diminution of spread of reinfecting bacilli in a sensitized organism as compared with a non-allergic one. A comparison of white and colored patients dead of tuberculosis as to the relative frequency of lym-

phatic and hematogenous spread (paying particular attention to the type and extent of metastases) was deemed to be of value in that it would indicate with fair reliability the degree of resistance during life. Some of the more notable findings are as follows:

MILIARY TUBERCULOSIS

Miliary tuberculosis was found at least twenty per cent more frequently in the Negro in every decade of life up to 50 and this is believed to be indicative of a low level of resistance. However, since on the other hand it may indicate nothing more than a mechanical accident, all cases of miliary tuberculosis are excluded from further consideration, and the remaining data deal with 190 Negroes and 185 whites.

HEMATOGENOUS SPREAD

Pointing out that the absence of metastases does not mean that blood stream invasion has not occurred but may rather denote the degree of resistance (specific or non-specific) to such spread, the authors observe that hematogenous propagation occurs twice as often in the Negroes as in the whites, only grossly visible lesions being taken into account.

LYMPHATIC SPREAD

From the point of view of resistance, spread via the lymphatics regularly occurs following first focalization and indicates presumably that state of resistance which is characteristic of "virgin soil".

Eliminating all calcified foci in lymph nodes since they might be part of the primary complex and taking into consideration only grossly visible lesions, spread via the lymphatics occurred nearly seven times as frequently in the colored as in the white group.

ISOLATED PHTHISIS

In contrast to the foregoing is the occurrence of isolated phthisis or tuberculous disease of one organic system with no evidence of involvement of distant organs, and which would presumably indicate a high degree of resistance.

This type of lesion was present in nearly half the white patients and less than 3 per cent of the Negroes.

DURATION OF DISEASE

This information which was available for 96 whites and 47 Negroes gave a total average for Negroes of 324 days and for whites 995 days.

The authors were aware that the nature of their material (postmortem) imposes limitations, since the difference noted between the two races are probably more pronounced on the postmortem table than in a sanatorium, and more definitely there than in an ambulant clinic. Nevertheless they feel that the material presented justifies some rather definite conclusions. In summary they find that the differences between Negroes and whites are as follows:

"The Negro shows much more frequently hematogenous and lymphogenous spread after a definite focus of tuberculosis is established; this tendency is indicated, too, by the fact that miliary tuberculosis is greatly more frequent in the Negro at all ages. His foci are more frequently exudative in nature, they are more frequently massive, and more often surrounded by collateral infiltrations or hemorrhagic zones. The most conspicuous of the differences is the much greater tendency to lymphatic involvement. The Negro exhibits at times a predominantly lymphatic involvement, which is an exceedingly rare occurrence in white adults. A generalized nodular tuberculosis occurs in some instances in Negroes which is hardly ever seen in whites. In addition, tuberculous lesions in the Negro perforate more often than in whites."

These pathological peculiarities in the Negro are submitted as proof of a diminished resistance.

VARIOUS THEORIES ANALYZED

Several writers have offered explanations to account for the lower resistance of the Negro:

a) It is said that the Negro, having been in contact with tuberculosis for a much briefer time than the white has not as yet had an opportunity to acquire the same measure of "inherited immunity."

The authors reply that this stands on unsafe ground since a true inheritance of acquired immunity has never been demonstrated.

b) It is said that the Negro escapes childhood infection more frequently than the whites; therefore, an infection acquired later in life occurs in virgin (non-allergic) soil and produces rapidly progressive "childhood type" tuberculosis.

The authors point to the results of large surveys, notably those of Opie and Aronson, which indicate clearly that this theory must be abandoned.

c) It is alleged that the apparent differences are due to environmental conditions and to the mental attitude of the Negro in regard to disease.

The authors comment that undoubtedly the greater opportunity for infection in crowded, unsanitary quarters from many undiagnosed cases of open tuberculosis is probably one of the most important factors causing the high tuberculosis incidence in the Negro, but it is difficult to see how environmental conditions contribute to the qualitative peculiarities in Negroes. When unfavorable living conditions in Germany sent the tuberculosis mortality soaring, no reports came forth to tell of qualitative changes in the course and in the anatomical character of the disease.

d) It is suggested that there exists a true racial difference between the two races, which confers high resistance on one and low resistance on the other race.

This hypothesis recommends itself strongly to the authors because of the apparent impossibility

of explaining the matter by any other alternative, and while this does not constitute proof, it seems at the present time the logical postulate and further studies should show whether it can be converted into an actual fact.

They would deplore violent attacks against such a theory on the ground that its acceptance might paralyze campaign measures now in use.

Pathological Peculiarities of Tuberculosis in the American Negro, Max Pinner and Joseph A. Kasper, Am. Rev. of Tuberc., Nov. 1932.

CORRESPONDENCE

FURTHER REFERENCES TO SCHOOLS OF PUBLIC HEALTH

15 Grosvenor Road,
Jamaica Plain, Mass.,
May 24, 1933.

Editor,
The *New England Journal of Medicine,*

In the *New England Journal of Medicine* of May 18, Wilson G. Smillie, M.D., calls attention, as others have already done, to an error appearing in a reproduction in the *Journal* of April 13 of a communication to the Legislature for which the undersigned was responsible.

The figures to which Dr. Smillie calls attention were taken from pages 74 and 75 of the official "Johns Hopkins University Circular; School of Hygiene and Public Health; Catalogue and Announcements for 1932-33."

In quoting from these pages it was erroneously stated by the undersigned that 32 students received in 1931 the degree of "Doctor of Public Health," instead of "Certificates in Public Health."

It would have served equally well the purpose of the reference to schools of Public Health in the communication published in the April 13 number of this *Journal*, to have used the actual figures for "Doctors of Public Health" given on page 66 of the "University Circular." Of the 15 students who received this degree at least nine were foreigners and *not one* was a resident of the State of Maryland in which the School is located.

The purpose of this reference was to suggest that Schools of Public Health have not as yet created a sufficient supply of persons schooled in public health theories to give to the responsible head of a municipal government a reasonable chance to find among such school taught residents of his state a man qualified by personality, medical knowledge and common sense to reflect credit on a municipal administration as its administrator of laws and regulations relating to the public health.

The undersigned has been interested in the promotion of special school instruction in public health since the idea started and has come in contact with students and graduates of all existing Schools of Public Health under conditions which have tended to lead him to form some idea of the varying capabilities of such students, both native and foreign, but in stating that the patronage of these schools "has been disappointing both in regard to the number and type of the persons that have taken advantage of the educational opportunities thus offered," the undersigned was voicing a regret expressed by men who have been securing financial support for these schools and not a personal opinion.

When this communication appeared in the *Journal* it had already done its part in preventing at this session of the legislature the enactment of the ill-advised legislation (House 661) which the communication considers. It was addressed to the legislature by the undersigned, not as a physician or as a health official, but as a tax-burdened citizen. The undersigned has been long enough in public health work to have learned that health promotion projects are not always actuated by purely altruistic motives and long enough to come to realize that "public health activities" even though started with the best of intentions may not justify their cost.

The administration of our local municipal governments may not be ideal, but these organizations are not going to be improved by demoralizing them by giving State officials an irresponsible dictatorship in the management of local affairs.

Very truly yours,
VICTOR SAFFORD.

INTEREST IN THE WORK OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

Mayo Clinic
Rochester, Minnesota
Surgical Section
of
Dr. Hugh Cabot

May 19, 1933.

Editor,
The *New England Journal of Medicine,*

I have been following with great interest your publications in the *New England Journal of Medicine* bearing upon the work of the Committee on the Costs of Medical Care. I have of course also been watching the other publications upon the subject, and for my sins hearing a great deal of mostly loose talk upon the question.

I write particularly to commend your statesmanlike management of this difficult problem of getting temperate discussion of so controversial a question. The *Journal* appears to me to have been publishing a very wide variety of opinions, and well-considered ones.

I particularly note and applaud the good temper of most of the discussions and of the editorials upon the subject.

At least in this part of the country reiteration and abuse are chiefly substituted for argument and proof.

Unless we can bring to the matter the kind of long-headed judgment which you have been show-

ing, I shall be troubled about the future of the profession in this relationship.

Sincerely yours,
HUGH CABOT.

FELLOWSHIPS PROVIDED BY THE COMMONWEALTH FUND

Harvard University
Medical School
Courses for Graduates

Boston, Massachusetts,
May 16, 1933.

Editor,
The *New England Journal of Medicine,*

I thought it would be of interest to the members of the Massachusetts Medical Society to know of some educational advantages which are open to Fellows of the Society at the Harvard Medical School, Courses for Graduates. Recently the Commonwealth Fund of New York has offered fellowships, of from one to four months with a stipend of $250 per month and tuition, to general practitioners in Massachusetts towns of under ten thousand. The applicants should be between the ages of thirty and fifty, and must have been in practice at least five years.

The fellowships are for courses in 1933. These courses include Medicine, Obstetrics and Pediatrics. All of these courses begin on the first of each month. Applications for fellowships should be made directly to The Commonwealth Fund, 41 East 57th Street, New York City. Any questions in regard to the courses may be addressed to Dr. Frank R. Ober, Assistant Dean of the Courses for Graduates, 240 Longwood Avenue, Boston. Application blanks may be obtained from the Courses for Graduates or from The Commonwealth Fund.

Yours sincerely,
LEROY E. PARKINS, M.D.,
Secretary to the Courses
for Graduates.

PRESIDENT LINCOLN'S ATTACK OF SMALLPOX

Editor,
The *New England Journal of Medicine,*

The following is from Barton's "President Lincoln" Volume II (The Bobbs Merrill Company, Indianapolis, 1933):

The President's illness first declared itself as he was coming back to Washington in the train, after the Memorable Gettysburg Address.

"In coming down to Gettysburg Lincoln had left little Tad sick at home, and Mrs. Lincoln was very anxious about him. So, for that matter, was the President. A telegram which he received at Gettysburg gave him some comfort, but he mentioned Tad's sickness to Edward Everett, who made inquiry subsequently, and Lincoln was glad to tell him that Tad was better.

"But before Tad was well, the President himself was sick. On the train, going back, he lay down with a wet towel across his forehead. He thought then that fatigue was all that ailed him. A few days later John Hay recorded in his *Diary* that the President was sick in bed, and he wrote to Nicolay a rather cryptic message which mentioned the risk of being in a smallpox ward.

"John Hay's reference to smallpox was not without significance. A few days later it was ascertained that the President had a light attack of smallpox known as varioloid. Mrs. Lincoln was sent out of the White House for a fortnight, but the President was not closely quarantined. He cheerfully welcomed office seekers to his bedroom, saying: 'Come on in. I have something now I can give to everybody.' Although Lincoln knew the nature of his ailment, he held one Cabinet meeting on the day following the diagnosis, because he wanted the Cabinet's approval of his Message to Congress.

"Lincoln got up from his sick bed on the first day to send two successive telegrams to Meade to save the life of a soldier sentenced to be shot for desertion. . . . For a time Mrs. Lincoln was in New York, and each day Lincoln sent her a telegram with the assuring message: 'All doing well.' On December seventh he wired that the carriage would meet her at six o'clock on the following day. The return of Mrs. Lincoln dates her husband's recovery from smallpox. Lincoln had to be well by that time, for on December eighth Congress convened."

Very truly yours,
WM. PEARCE COUES, M.D.

RECENT DEATHS

HOPKINSON — GEORGE HOPKINSON, M.D., of 407 Marlborough Street, Boston, died at his home May 26, 1933.

Dr. Hopkinson was born in Rangoon, Burma, in 1873. His parents were the Rev. Henry M. Hopkinson and Sarah Rigby Hopkinson. His premedical education was acquired at Boston University and his M.D. degree was conferred by the Harvard University Medical School in 1905. He later engaged in postgraduate work at the New York Eye and Ear Hospital. After practicing in Boston as a specialist in eye, ear and throat work for ten years he was employed as the physician in the Goodyear Rubber Company during the war period, also carrying on his private practice in Akron. After five years he returned to Boston and practiced until ill health required nearly complete retirement from professional work.

Dr. Hopkinson was the founder of the Berkeley Preparatory School in 1907 and he was its director at the time of his death. He joined the Massachusetts Medical Society in 1906 and was also a Fellow of the American Medical Association.

He is survived by his widow who was Miss Helen Andrews; a son, George Hopkinson, Jr., a student at the Harvard School of Business Administration; a daughter, Emily, now in Wellesley College, and a brother, Henry Hopkinson of West Acton.

CANNEY — Ellen Canney, M.D., of 552 County Street, New Bedford, died January 8, 1933.

She graduated from the University of Michigan Medical School in 1898 and joined the Massachusetts Medical Society in 1912. She was especially interested in roentgenology with reference to bones, joints and disabilities of the feet.

DORR—Charles Alonzo Dorr, a practitioner of fifty years in Hingham, Massachusetts died May 27, 1933. He was born in Sandwich, New Hampshire February 12, 1851. His premedical education was acquired at Dummer Academy and at Bowdoin College. He graduated from the latter with the class of 1875. Dr. Dorr began the study of medicine at Bowdoin and later on completion of his course at the Dartmouth Medical School was given his M.D. degree from that institution in 1878. His first practice was in Richmond, Maine and after a short time there he moved to Hingham in 1880, where in addition to his practice much time was given to civic affairs. He served on the local board of health and school committee. In 1878 he married Miss Bertha Wentworth of Brunswick, Maine. She died in 1912.

Dr. Dorr joined the Massachusetts Medical Society in 1885 and retired in 1920.

COUNCILMAN — William Thomas Councilman, M.D. died in York Village, Maine May 26, 1933. He was born in Pikesville, Maryland, January 1, 1854, the son of Dr. John T. and Christiana Drummond (Mitchell) Councilman. His premedical education was acquired at St. John's College, Annapolis, Maryland and his degree in medicine was conferred by the University of Maryland in 1878. Further studies in medicine were prosecuted at the University at Vienna and at Leipzig. Harvard conferred an honorary A.M. on him in 1899, Johns Hopkins, an LL.D. in 1902 and he was further honored by McGill and his Alma Mater. After serving as Associate Professor of Pathology at Johns Hopkins, he occupied the chair of Shattuck Professor of Pathological Anatomy at Harvard from 1892 until ten years ago when he resigned.

His membership in scientific bodies was large, including the American Academy of Arts and Sciences, the Philadelphia Academy of Medicine, the National Academy of Sciences and several others. He joined the Massachusetts Medical Society in 1892 and retired in 1922. He was also a Fellow of the American Medical Association in his active years.

In 1894 Dr. Councilman married Isabella Coolidge of Boston. She survives him, as do three daughters, Dr. Elizabeth Councilman of New York, Mrs. W. O. Morgan and Mrs. Frank Wigglesworth, both of Cambridge.

OTIS—Edward Osgood Otis, M.D. died at his home in Exeter, New Hampshire May 28, 1933. He was born in Rye, New Hampshire in 1848. He prepared for college at Phillips Exeter and graduated from Harvard College in 1871 with honors and the Harvard Medical School in 1877. His early interest was in surgery and in 1886 he was appointed to the Surgical Staff of the Boston Dispensary and became prominent in the development of that institution. In 1890 he was appointed as its superintendent and held this position for four years until his interest in pulmonary diseases led to his selection as consultant in this field. He concentrated his interest in tuberculosis during the rest of his career, taking an active part in the founding or the subsequent operation of a number of tuberculosis societies, including the National Association for the Study and Prevention of Tuberculosis, and the Boston Association for the Relief and Control of Tuberculosis, besides the national and Massachusetts societies. Dr. Otis also held honorary degrees for his work in the disease from Tufts College and the University of New Hampshire.

He was not only widely interested in the Massachusetts Tuberculosis League, of which he was honorary president, but until he became inactive several years ago, was the consulting physician to a number of specialized hospitals and institutions, including the Home for Consumptives and the Massachusetts State Sanatorium at Rutland. He was also Professor of Pulmonary Diseases and Climatology at Tufts College Medical School.

Dr. Otis was a delegate to the Congress of Tuberculosis at London in 1901 and to that at Rome in 1912. He was everywhere regarded as an authority on the disease and was the author of a number of treatises for medical texts and of articles on the disease in other medical literature.

On June 6, 1894, Dr. Otis married Marion Faxon of Boston, who survives him, as do a daughter, Miss Olive Otis, and four sons, John F. Otis, Edward O. Otis, Jr., William F. Otis and Brooks Otis.

CORRECTION

It was stated in the death notice of Dr. Russell Dunson Elliott, page 1122, issue of May 25, that he studied medicine at the Tufts College Medical School and the Harvard Medical School graduating from the latter in 1873.

The notice should have read that Dr. Elliott studied at Tufts College prior to entering Harvard Medical School from which he graduated in 1873.

SUPPLEMENTARY STATEMENT

Information received subsequent to that contained in the notice of the death of Dr. Arthur Linwood Brown is to the effect that Dr. Brown's widow survives him. Mrs. Brown was Miss Alice McIntyre before her marriage.

NOTICE

RADIO HEALTH MESSAGES

JUNE, 1933

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:30 P.M.

June

6 Safer Maternity
13 The Care of the Skin
20 A Heart to Heart Talk
27 Social Service in Public Health

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:45 P.M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

REPORTS AND NOTICES OF MEETINGS

THE PETER BENT BRIGHAM HOSPITAL REUNION

The Peter Bent Brigham Hospital held a reunion on May 4, 5 and 6, 1933, on the occasion of its twentieth birthday. A clinical program was presented by the present and former staff members, and in the evenings entertainment of a varied nature was provided for all. There was a total registration of 425 for the reunion activities.

Those arriving early had the privilege of witnessing the presentation of the Henry J. Bigelow medal to Dr. Harvey Cushing by the Boston Surgical Society on Wednesday evening, May 3. On the following mornings there were surgical operations and ward visits by members of the Staff of the Hospital. From eleven until one and from two-thirty until four-thirty each day for the three days there were short talks, limited to ten minutes each, on subjects of current medical interest by members and former members of the Hospital Staff.

A feature of the program was a tea given at 4:30 P.M. on Friday by the Nurses' Alumnae Association. At this time Miss Hall, Superintendent of nurses at the hospital, was given a surprise presentation of a Sheffield Plate Tea Service from her pupils and associates and former and present members of the Staff.

In the way of entertainment a musical review, written by Dr. George Wilkins, Surgical House Officer, and Dr. John Gibson, Medical House Officer, and directed by Dr. Kenneth Thompson, Harvey Cushing Fellow in Surgery, was presented by the members of the resident staff before the former house officers and nurses on Thursday evening in the hospital amphitheatre. Members of the staff were caricatured in characteristic situations by the players wearing large papier-mâché masks, prepared secretly in advance by students at the Massachusetts Art School from photographs and sketches. Certain extraordinary roentgenological studies were presented to the staff by Dr. Merrill Sosman at a parody of the weekly x-ray conference. What there was of plot to the performance revolved about the admission of a blackface patient to the hospital and the lack of agreement among the members of the staff as to whether he belonged on the Medical or Surgical service. The problem had not been solved at the final curtain.

A total of 330 people attended a dinner in Vanderbilt Hall on Friday evening. At this reunion of the visitors and the full professors at the Harvard Medical School, portraits of Dr. Harvey Cushing and Dr. Henry A. Christian were presented to the Peter Bent Brigham Hospital and Harvard University, respectively. These portraits were given to the institutions by the Faculty and former and present members of the Peter Bent Brigham Hospital. Dr. Elliott C. Cutler, Moseley Professor of Surgery at Harvard, presided. Dr. Walter B. Cannon spoke briefly for the Faculty, and Dr. Gilbert Horrax for Dr. Cushing's pupils, Dr. Francis G. Blake, Professor of Medicine at Yale, spoke for Dr. Christian's pupils. Dr. John Homans presented the portrait of Dr. Cushing, and this was accepted for the Peter Bent Brigham Hospital by Mr. C. P. Curtis, President of the Board of Incorporators. After a brief address by Dr. Cushing, Dr. Reginald Fitz presented Dr. Christian's portrait; President A. Lawrence Lowell accepted it for Harvard; and Dr. Christian responded briefly, reviewing his life and education. The Brigham group then adjourned to Longwood Towers for an evening of dancing.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held its annual meeting and dinner on Tuesday, May 9, 1933, at the Salem Country Club.

The annual reports of the secretary and treasurer were read and approved and the following list of officers for the ensuing year elected:

President: Dr. R. E. Foss, Peabody.
Vice President: Dr. J. G. Corcoran, Hamilton.
Secretary: Dr. R. E. Stone, Beverly.
Treasurer: Dr. Andrew Nichols, III, Danvers.
Librarian: Dr. C. M. Cobb, Lynn.
Commissioner of Trials: Dr. J. E. Simpson, Salem.
Censors: Dr. A. E. Parkhurst (Supervisor), Beverly; Dr. G. E. Tucker, Salem; Dr. S. R. Davis,

Lynn; Dr. O. C. Blair, Lynn; Dr. Hanford Carvel, Gloucester.

Nominating Councilor: Dr. C. L. Curtis, Salem.

Alternate Nominating: Dr. A. E. Parkhurst, Beverly.

Councilors: Dr. G. H. Kirkpatrick, Lynn; Dr. J. F. Jordan, Peabody; Dr. C. L. Curtis, Salem; Dr. N. P. Breed, Lynn; Dr. J. W. Trask, Lynn; Dr. E. B. Hallet, Gloucester; Dr. C. H. Phillips, Beverly; Dr. W. G. Phippen, Salem; Dr. J. F. Donaldson, Salem; Dr. W. T. Hopkins, Lynn; Dr. F. W. Baldwin, Danvers; Dr. O. S. Pettengill, Middleton; Dr. A. E. Parkhurst, Beverly.

Executive Committee: Dr. J. R. Shaughnessy, Salem; Dr. R. P. Hallet, Gloucester; Dr. C. L. Hoitt, Lynn; Dr. Sherman Golden, Beverly; Dr. O. S. Pettengill, Middleton; Dr. C. A. Bonner, Hathorne.

Submitted by the Nominating Committee: Dr. J. F. Donaldson, Chairman; Dr. N. P. Breed, Dr. L. C. Swan, Dr. R. P. Hallet.

Dr. R. E. Foss, and Dr. R. E. Stone, by reason of their respective offices, are also Councilors.

The guest of the evening, Dr. George Burgess Magrath, spoke on his experiences as medical examiner, with illustrations by means of slides and photographs.

In addition to the members, many ladies also enjoyed the occasion.

WM. T. HOPKINS, *Reporter.*

HAMPDEN DISTRICT MEDICAL SOCIETY

A regular meeting of the Hampden District Medical Society was held, April 25, 1933, in the rooms of the Springfield Academy of Medicine. A paper entitled "The Importance of Location in the Differential Diagnosis of Benign and Malignant Ulcerations" was presented by Dr. George W. Holmes, of Boston.

During the business session the new officers were elected and at the close of the meeting supper was served by the Society.

SIR HENRY DALE DELIVERS ADDRESS AT THE HARVARD MEDICAL SCHOOL

Sir Henry Dale, Director of Research at the National Institute for Medical Research, Hampstead, London, delivered a lecture on "Some Factors of Internal Chemical Control" in Amphitheatre C at Harvard Medical School on the afternoon of April 27. He was introduced by Dr. Reid Hunt who mentioned particularly the work of Sir Henry in investigating the active constituents of ergot.

The speaker stated that recently some important new discoveries have been made in the study of ergot in his laboratory. None of the active ingredients of this drug which were isolated by Sir Henry were found in the water extract so much used in obstetrical work. Because of this, it was thought that the water extract was of no real value in producing contraction of the uterine musculature. Now it has been found that such an extract is the most potent of all ergot preparations in stimulating the uterine muscle and hence the action of ergot and its active constituents must again be investigated.

In speaking of factors of internal chemical control, Sir Henry mentioned histamine and acetylcholine in particular. Histamine is a natural constituent of every living cell. It is found in largest amounts in the lungs. The action of histamine locally is the same as that produced by scratching the surface of the skin. A triple response consisting of a red streak followed by a localized wheal formation and a flushing of the surrounding area is seen. The scratch releases histamine locally.

Just as histamine has a specific local action, so also some consider the general reaction of anaphylactic shock to be due to a release of this substance into the general circulation. It is known that a substance identical with histamine in its reactions is markedly increased in the animal subjected to anaphylactic shock. If this be so and the shock is dependent upon histamine, why is not anaphylactic shock the same in all animals? It is well known that animals such as the rat and mouse are relatively insensitive to anaphylactic shock, but it is equally true that they are also insensitive to the action of histamine. To explain this Sir Henry postulated that in such animals other substances are liberated by the antigen which neutralizes the action of histamine. To illustrate how variable histamine is in its reactions depending upon the conditions under which it is observed, the speaker cited the example of the frog. Histamine is liberated locally when the back of the frog is scratched, but no triple response follows. When injection of the material liberated into the tongue of the frog is done a typical triple response ensues, but pricked into the skin of man the same material elicits little or no reaction.

The speaker next considered acetylcholine which has the same effect in the body as the parasympathetic nervous system. Loewi showed that by perfusing one frog's heart with the perfusate of another heart that had been subjected to vagal stimulation a slowing of the heart followed. The substance released by vagus action was found to be identical with acetylcholine in its effects on other organs besides the heart.

Acetylcholine is destroyed very rapidly in the body. When physostigmine is injected into the blood stream it inhibits this destruction and choline-like substances liberated by nerve stimulation may thus exert their effects in other organs. To show this experimentally, physostigmine was injected into an animal whose left chorda tympani was then stimulated. Active secretion of the left as well as the right submaxillary gland followed. When the efferent vein of the left submaxillary gland was ligated no such response took place. The right submaxillary response is presumably due to the release of a substance very similar to acetylcholine

in the left submaxillary gland when the chorda tympani is stimulated.

When the motor nerves to the tongue are severed, stimulation of the chorda tympani leads to a contraction of the atrophied muscle, which does not take place when the motor nerves are intact. This action is presumably due to liberation of acetylcholine about the arterioles and this perfuses into the surrounding tissue and stimulates the muscle.

If we consider that vagal stimulation leads to liberation of acetylcholine in the end organs, there are several apparent contradictions that must be explained. If epinephrine is injected into the general circulation, acetylcholine exerts no effect when applied locally to the submaxillary gland, while stimulation of the chorda tympani still gives a good response. In order to act, acetylcholine must come into very close contact with the cells, and epinephrine blocks this possibility when acetylcholine is applied locally. When the chorda tympani is stimulated acetylcholine is liberated within the block formed by epinephrine and hence produces a response.

Atropine blocks the action of the vagus on the heart and of the chorda tympani but not of the vagus in the intestine or pelvic organs. But physostigmine enhances vagus action in the intestine and the action of acetylcholine is similarly affected. Here we may explain the apparent discrepancy by conceiving that the nerve ends of the chorda tympani and vagus in the heart are farther from the cells of the end organ than in the intestine and hence atropine can intervene and form a block between the acetylcholine liberated and the cells. In the intestine and pelvic organs the nerve ends are so close to the cell that no such block is possible.

In speaking of the wide area of flushing that is part of the triple response, Sir Henry stated that this is probably due to a liberation of acetylcholine through the axone reflex. That acetylcholine is a constituent of the body was found accidentally in Sir Henry's laboratory in working with ox flesh, from which this substance was crystallized in pure form. Just as acetylcholine is the vagus substance so also is Cannon's sympathin a sympathetic substance.

In closing the speaker suggested that the name for this study of factors of internal chemical control be autopharmacology.

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The members of the New England Physical Therapy Society will meet on Tuesday morning, June 6, 1933, at 8:45 o'clock in the Georgian Room of the Hotel Statler in Boston to attend the Section of Radiology and Physical Therapy of the Annual Meeting of the Massachusetts Medical Society.

A private room in the hotel will be reserved for a business meeting directly following the papers of this section. This will be the last meeting of the Society until October.

ARTHUR H. RING, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

June 6—New England Physical Therapy Society. See notice elsewhere on this page.

June 6—Harvard Medical Alumni Association. See notice on page 1131, issue of May 25.

June 12—Golf for Members of the American Medical Association. See page 1022, issue of May 11.

June 12-13—The American Proctologic Society. See page 1025, issue of May 11.

June 12-16—Woman's Auxiliary to the American Medical Association. See page 815, issue of April 13.

June 13—The American Board of Obstetrics and Gynecology. See page 607, issue of March 16.

June 13—American Heart Association. See page 768, issue of April 6.

June 28 to July 3—Third International Hospital Association. See page 811, issue of April 13.

July 24-31—The IVth International Congress of Radiology. See page 1071, issue of May 18.

August 10, 11, 12—American Delegation to the International Goiter Conference. See page 768, issue of April 6.

August 13-27—Courses at the Tomarkin Foundation. See page 1070, issue of May 18.

October 9-12—American Public Health Association. See page 1175.

October 23 - November 3—The 1933 Graduate Fortnight of the New York Academy of Medicine. See page 1071, issue of May 18.

April 16-20, 1934—The American College of Physicians. See notice on page 970, issue of May 4.

BOOK REVIEWS

Experimentelle Tuberkuloseforschung. Heft 3. Serie C. Anatomischen Institutes der Kaiserlichen Universität Kyoto. Herausgegeben von PROF. DR. SEIGO FUNAOKA, Vorstand der Abteilung.

This group of articles has to do chiefly with the phosphatase content of various organs and tissues. It more particularly deals with the use of fructose-6-calcium monophosphate, otherwise known as yatoconin, in trachoma, consisting chiefly of brief reports in which yatoconin has apparently given good results. In the course of one of the articles remarkable results obtained with this same substance in tuberculous peritonitis are mentioned.

Les Constipations Diagnostic et Traitement. By M. CHIRAY et R. STIEFFEL, Masson et Cie. Paris; 1933. Price 20 fr.

This small book, one of a series on the practice of Medicine and Surgery, describes briefly the physiology of the colon, and outlines the classification, differential diagnosis, occurrence and signs, and the treatment of constipation. The adoption of hygienic measures for the correction of this disorder is especially recommended.

BOOK RECEIVED FOR REVIEW

Criteria for the Classification and Diagnosis of Heart Disease by the Criteria Committee of the Heart Committee of the New York Tuberculosis and Health Association, Inc. Third Edition. Published by the New York Tuberculosis and Health Association. 131 Pages.